OK 7, 20, 65

Remeasured cracoids San Diego mandible

total 19
11 = normal
- 2208 age?
- 2557 mio
- 2276 age?
- 2338 age?
- 2627
- 45843
- 45843
- 2499
- 2559
- 2229

46028

8 = nlav
- 2087 age?
- 2849
- 2290
- 2322
- 2310
- 4586 3rd
- 2067
- 2498 est

Length head (highest back of typanic) to middle of sternal end

398 of 449 are used

$446.1 = \Sigma X$

$199005.21 = (\Sigma X)^2$

$18091.38 = \frac{(\Sigma X)^2}{n}$

ΣX^2 18117.83
− 18091.38
10) 26.45 = 2.645 = n^2

$\frac{1005}{M} = \frac{162.7}{40.5} = 4 = V$

115 = max/min lays

$403.7 = \Sigma X$

$20371.71 = \frac{(\Sigma X)^2}{n}$

20415.03
− 20371.71
7) 43.32 (6.188 = n^2
2.486 = n

$\frac{1005}{M} = \frac{248.6}{50.4} = 4.9 = V$

$28.32 = n^2$
$5.32 = n$
$\frac{1005}{447} = \frac{5320}{447} = 11.9 = V$ for all

446.1
403.7
19) 849.8 (44.7 = M
76
89 combined
76
138 + drop
133

$(\Sigma X)^2 = 722436$
19) 38022.94

56 max/min 390
39) 56
39
17
14 0
11 9
230

18117.83
20415.03
38532.86
38022.94
18) 509.92 (28.328
36
149
144
52
36
160
144
16

5,25
5,25
2625
1050
2756,25
27 756,25 236
79 7449
191787
178,7

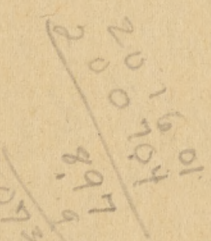
797449
1787
797627,7

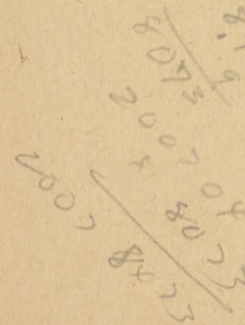
39881,3
20) 797627,7
60
197
180
176
160
162
160
27

17946,46
2245,8,67
40405,13
39881,30
19) 523,83 (27,56 = r
38
143
133
108
95
133

A = 5,25
$A = \frac{\pi d^2}{4} = \frac{525,00}{44,6}$

11,7
446) 525,00
446
790
446
3440
3122





Maucalla Cacao Quale

Remeasured 7.16.65

Revised

37.3	1391.29
38.5	1482.25
39.6	1568.16
39.9	1592.01
40.0	1600.00
40.5	1640.25
40.7	1656.49
40.8	1664.64
41.2	1697.44
41.4	1713.96
41.8	1722.25
ΣX 441.4	17728.74
$\bar{X}$ = 40.13	17712.17
$(\Sigma X)^2$ = 194833.96	16.57 = $n s^2$
Σn = 17712.17	$s = \sqrt{1.657} = 1.285$
$n(s)$ = 20517.87	
add 44.8	add 2007.04
12) 486.2 (40.5	19735.80
	19699.2
$\frac{(\Sigma X)^2}{n}$ 236390.44 / 19699.2	$n-1=11$) 36.6 (3.327
n =12	33
	36
	33
	30
	22
	80

41.5 / 37.3 = 1.190

V 2.7

2.9

461) 1285.5 (

922

3630

3488

44.8 / 37.3 max/min = 1.209

V = 4.5

s^2

$s = \sqrt{3.327} = 1.822087$

100 s = 182.2

4.5

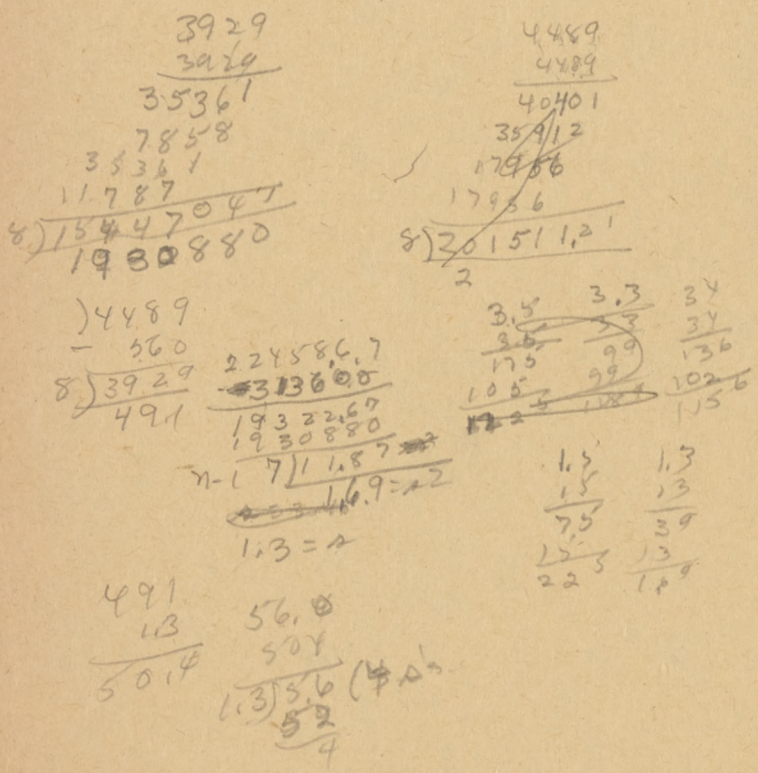
405) 1822 (

1620

2020

40.5 = 46.5

X



cut steps but back of

well's Remarks coracoids S. D. Length head to mid sternal facet

	grad	age ?
2229	41.4	no #
45843	40.2 ✓	2208
46028	44.9	2276
45844	40.4 ✓	2338
2627	39.8 ✓	
2559	41.3 ✓	
2498	40.5 ✓	
	39.4	2557 inc
	327.9	
2290	49.0 ✓	
2310	49.2 ✓	2087
2849	48.6 ✓	
2422	49.6 ✓	
2067	51.9	
249	50.2	45863 inc
	56.0	2498 inc
	355.2	

37.2 out looks to unformed
used 38.5?

39.4? used

48.5 used

Large humeri
45 – 51.9 (omit 56 + used 45)
V = 5.0

50.2 used (compared with 2290 + is larger)
56+ used (marked largest 2067)

2229	41.5	1722.25	
2243	41.4	1713.96	
2559	41.2	1697.44	
45844	40.8	1664.64	
2498	40.7	1656.49	
45843	40.5	1640.25	
2338	40.1	1608.01	
2557	40.0	1600.00	
2276	39.9	1592.01	
2627	39.6	1568.16	
2208	38.5	1482.25	
	11)444.2	17946.46	
	1991 40.3	17914.00	
	11)197054	10)32.46	
	11	3.246 = s	
	87		
	77		
	1000		
	99		
	1.5		

46028	45.0	2025.00
2849	48.6	2361.96
2087	48.7	2371.69
2290	49.0	2401.00
2422	49.7	2470.09
2310	50.2	2520.04
45863	50.0	2500.00
02067	51.7	2672.89
2498	56.0	3136.00
	9)4489	22458.67
	498	22369.41
	223694.1	8)89.26
	9)2007847.3	11.15 = σ^2
	18	
	20	s = 3.3317
	18	
	27	1005 333.17
		n 498
		64
		498)333.17
		2988
		3437

4442
4489
20)89931
44.6

121.8
1000 150.0 = 40.4
m 40.3

n = 20 Coracao

7.25.64 fr tuberculin

7.17.65 by totals

1	37.3	37-38	2
1	38.5		
	39.6		
2	39.9		
	40.0	39-40	6
	40.5		
4	40.7		
	40.8		
	41.2		
3	41.4	41-42	3
	41.5		
1	44.8	43-44	1
		45-46	0
	48.6		
2	48.7	47-48	2
	49.0		
2	49.7	49-50	4
1	50.0		
	50.2		
1	51.7	51-52	1
		53-54	0
1	560	55-56	1

	36-37	-1	1391.29
	38-39	-3	1482.25
			1568.16
	40-41	-7	1592.01
			1600.00
	42-43	-0	1640.25
			1656.49
	44-45	-1	1664.64
	46-47	0	1697.44
	48-49	4	1713.96
	50-51	3	1732.25
	52-53	0	2007.04
	54-55	0	2361.96
	56-57	1	2371.69
			2401.00
			2470.09
			2500.00
			2520.04
			2672.89
			3136.00

56 mg/mm 373

150

373)560
373
1870
1865
50

19)555.55 (29.24
38
175
171
45
36
75

20433.67
14735.78
40169.45
39613.90

ΣX 8908.1

n (20) 44.5

$(\Sigma X)^2$ 20) 79227801
40
192
180
122
120
27
20
78
60
180

396139

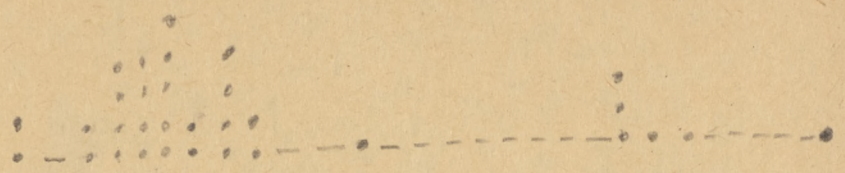
$S^2 = 29.2$

$S = \sqrt{29.2} = 5.403702$

$\frac{100S}{X} = \frac{540.3}{44.5}$

121
445) 5403.1
445
953
890
630

Paucalla Humerus – breadth proximal for antwabz



14,2	14,2	1-2	14,2
14,2			
14,6	14,6	3,4	14,6
14,6			
14,6			
14,7	14,7	7-8	14,8
14,7			
14,8	14,8		
14,8			
15,0	15,0	9-0	15,0
15,0			
15,0			
15,0			
15,1	15,1	1-2	15,2
15,1			
15,1			
15,2	15,2		
15,2			
15,4	15,4	3-4	15,4
15,4			
15,4			
15,5	15,5	5-6	15,6
15,5			
15,5			
15,6	15,6		
15,7	15,7	7-8	15,8
15,7		9-0	
16,4	16,4	1-2	16,4
		3-4	
18,2	18,2		18,2
18,2			
18,2			
18,4	18,4	3,4	18,4
18,6	18,6	5,6	18,6
18,7	18,7	7,8	18,8
18,9	18,9	9,0	19,0
20,3	20,3		20,2

14 – 14,4	2
14,5 – 14,9	6
15 – 15,4	11
15,5 – 15,9	6
16 – 16,4	1
16,5 – 16,9	0
17 – 17,4	0
17,5 – 17,9	0
18 – 18,4	2
18,5 – 18,9	3
19 – 19,4	0
19,5 – 19,9	0
20 – 20,4	1

San Diego Manuella Cary 3, 1969

Arranged subset - 7th pint inside int's top or sternal joint

2498 54.0	2916.00	
2067 50.1	2510.01	
2310 48.6	2361.96	
2290 48.2	2323.24	
2422 48.1	2313.61	
2049 47.7	2275.29	
6)2967	14700.11	
49.4	-14671.81	
5)2830 = S^2		

2967
2467
2076.9
17802
24703
5934
6)88030.89
14671.81

501
501
501
2505
25100.1

4.95
4.95
2475
4455
1980
24502.5

$S = 2.379 \times \frac{100}{494} =$ 4.8 = √bar

494)2379.
1976
4030
3952

2498 40.2	1616.04	
2229 40.4	1632.16	
2559 40.7	1656.49	
46026 43.5	1892.25	
2337 39.6	1568.16	
2337 39.6	1568.16	
2376 39.3	1544.49	
48844 39.3	1544.49	
2427 39.2	1536.64	
9)3618	14595.88	
40.2	14544.47	
add 58.7	8)12.41	
400.3	1.80 = a^2,	
M=40.0		

3618
3618
28944
3618
21708
10854
9)130900.24
14544.47

3618
3618
4003
4003
12209
16012
10)160240.09

1482.25
14558.88
16041.13
16024.09
9)17.04 (1.89 = a^2
9
80
72
84
81
$a = 1.374773$

$\frac{1.3416 \times 100}{40.2} =$

3.4
40)137.477
120
174
160
147

3.3
40.2)134.16
1206
1356
1206
1500

2967
3618
15)6585.2 (43.9
60
58
45
135
135

$R^2 = 25.06$
$a = 5$
$V = 500$

14558.88
14700.11
29258.99
28908.15
14)350.84 (25.063
25
101
98
34

29258.99
14822.35
30371.34
30373.00
364345.29 25
5268
3510

6585
+ 3618
16)6970.0 (149.5
64
57
45
90

2925899
14822.35
30371.34
30373.00
364345.29 25
5268
3510

15)433622.25 (28904.15
30
133
120
136
135
90

697
697
4879
6273
4184
14)486009 (30375
48
60
48
120
112
89

24.43
16)390.87
30
66
60
67
60
7

4.94

4.95
4.95
2475
4955
1980
12.25025
22

11.3
500 (43.9
439
610
439
1710
1756

V=11.1 with
435)494.0
435
590
435
550

38.5 added (not mean) why mean?

Cedar Scale

14.2 — 201.64
13.5 — 182.25
12.6 — 158.76

3)40.3 — 3)542.65 — 3)1624.09
13.4 — 541.36 — 541.36

2)1.29
.6 × 4 = x²

x² = .64
x = .8

V = 134)80.0
670
1300
1206
940
938
36

40.3
403
1209
1612

142
142
284
568
142
20164

5418
3)16249
15
12
12
4
3
10
9
19
18
1

Humerus Rancalle, S. D. reanalysis 5.21.65

n=23 small

n.	56.4	3180.96
	58.1 1.7	3375.61
	58.7 .6	3445.69
	61.0 2.3	3721.00
	61.2 .2	3745.44
	61.3 .1	3757.69
	61.3	3757.69
	62.0 .7	3844.00
	62.6 .6	3918.76
	62.7 .1	3931.29
	62.8 .1	3943.84
	63.1 .3	3981.61
	63.2 .1	3994.24
	63.2	3994.24
633	63.4 .2	4019.56
	63.6 .2	4044.96
	63.7 .1	4057.69
	63.8 .1	4070.44
	65.0 1.2	4225.00
	65.1 .1	4238.01
	66.1 1.0	4369.21
	66.5 .4	4422.25
	66.6 .1	4435.56
	1441.4	90474.74

Totals

$\frac{(\Sigma X)^2}{n} = \frac{1976.9^2}{30} = \frac{3,908,133.61}{30}$ 130271.12

$\Sigma X^2 = 131598.69$

$- \frac{(\Sigma X)^2}{n} = 130271.12$

$n-1$ 29) 1327.57 (45.77 $= s^2$

116

167

145

225

203

227

10,26

$s = \sqrt{45.77} = 6.765$

$\frac{100s}{m} = \frac{676.51}{65.9}$

65.9) 676.51

659

1751

1318

4330

65.9

30) 1976.9

180

176

150

269

240

29

61.6

66.1

151

564) 852

564

2880

2820

600

1976.90

− 852

1891.7

182

174

8

97

87

10

8

2

1891.7

132419

18917

170253

151336

18917

3 357752889

29)

591 652) 59100

58

531

295

348

9,0

5868

420

1315698.69

− 725904

12439.65

12396304

28) 1076.58 (38.4

84

136

112

245

224

210

see next page for small & large separated

Lary n=7 → 7.3

	70.9	5026.81
	72.2 1.3	5212.84
	73.5 1.3	5402.25
	74.6 1.1	5565.16
	78.7 4.1	6193.69
	80.4 1.7	6464.16
	85.2 4.8	7259.04
	535.5	41123.95

535.5 − 85.5 = 450.0

6) 450.0

75.0

41123.95

7259.04

33864.91

− 33750.00

N-1=5) 114.91

22.98 $= s^2$

$s = \sqrt{22.98} = 4.79$

$\frac{100s}{m} = V$

4.50

4.50

0.00

2250

1800

6) 2025000

33750

75) 479 (6.3

450

290

225

65

(omitting 85.5)

75) 479

450

290

225

140

65.89 = M

30) 1976.90

180

176

150

269

240

290

willmann 65.2

29) 1891.7

174

151

145

267

Humerus manubria S.D. analysis cont'd 2.21.65

Broken to small + large —

SMALL

Total Σx manub (from previous p.) Total Σx^2

$n = 23$ 1441.4 90474.74

$\frac{(\Sigma x)^2}{n}$ $\frac{2077633.96}{23} = 90331.91$ −90331.91

22) 142.83 (6.492 = s^2

$n-1$ 132

108

88

203

198

5.0

$s = 2.5475$

$\frac{100s}{M} = \frac{254.75}{62.67} = 4.0$ ✓

62.67

23) 1441.4

138

61

46

154

138

160

66.6 58.4

max/min

62.67
7.6425
70.3125

2.5475
3
7.6425

62.6700
7.6425
55.0275

LARGE $n = 7$

$\Sigma x = 535.5$

$\frac{(\Sigma x)^2}{n} = \frac{286740.25}{7} =$ Σx^2 41123.95
40967.18

$n-1 = 6$) 156.77 (26.128 = s^2

$s = 5.112$

$\frac{100s}{M} = \frac{511.2}{76.5}$

5.112
×3
15.336

76.5
1.53
91.8

76.5
15.3
61.2

85.2 7.09

max/min

4.6 ✓

76.5) 511.2

459.0

5220

7) 535.5

49

45

42

35

709) 852

709

1430

1418

120

Humerus

	Lgth		prox	short lgth
56-58	56.4	1.7	14.2 ✓	
	58.1	.6	14.8 ✓	38.7
3	58.7		—	
59-60		2.3		
	61.0		14.6 ✓	
	61.2	.3	—	
61-62		.1		
	61.3		15.1 ✓	41.3
9				
	61.3		—	40.8
2×2+X	61.4?	.7	15.0 ✓	44.3
	62.0		15.0 ✓	
		.4		
	62.4		14.8 ✓	43.2
		.1		
	62.5		15.4 ✓	
		.1		
	62.6		15.2 ✓	41.6
		.3		
	63.1		15.5 ✓	
63-64		.1		
	63.2		15.4 ✓	43.7
			15.2 ✓	44.7
7	63.2			
	63.4	.2	15.1? ✓	43.3
	63.6	.2	15.7 ✓	43.3
		.1		
	63.7		15.5 ✓	
		.1		
	63.8		14.2 ✓	44.1
		.2		
	65.0		15.7 ✓	
		.1		
	65.1		15.1 ✓	
		1.0	15.5 ✓	44.3
65.66	66.1	.4		
	66.5		15.6 ✓	45.3
5		.1		
	66.6		15.7 ✓	
	63.0		15.6 ✓	
			14.3 ✓	
			16.2 ✓	
			14.8 ✓	44.9 ✓
			14.7	40.2 ✓
			15.3 ✓	
			16.1 ✓	42.3 ✓
			14.6	
			15.0	42.4 ✓
			15.0	43.4 ✓
			16.4	45.3 ✓
			15.8 ✓	
			15.3 ✓	
			15.8 ✓	

16.2 ✓ 16.3 ✓ 15.6 ✓ 15.1 ✓ 16.7 ✓ 15.7 ✓ 16.2 ✓ 14.9 ✓ 15.0 ✓ 15.9 ✓

33 14 18 8 64 (4 dim.
138 6 long 2 4 + 5'
short 10 long

Lgth

		prox	short lgth
70.9	71.0	18.4 ✓	
		17.9 ✓	
		17.3 ✓	
1.2			
72.2		18.2 ✓	47.6
1.3			
73.5		18.2 ✓	48.7
1.1			
74.6		18.7 ✓	49.7
		18.5 ✓	
		18.9 ✓	
4.1	76.7 ✓	—	54.2
	78.0		
78.7		18.2 ✓	
1.7	79.0		
5.2	80.4?	18.6 ✓	54.8
85.2		20.3 ✓	57.0

7) 535.3 (76.4
49
45
42
35

18.3 ✓
17.5 ✓
17.8 ✓
20.0 ✓
14.3 ✓

	gr. l.	sh. l.	prox
small	56.4	38.7	14.2
	66.6	45.3	16.4
large	70.9	47.6	18.2*
	85.2	57.0	20.3

71.0 where splice 17.3
66.6 17.5
4.4 17.9

1448.4
535.5
30) 19839 (66.
180
183
180
34

prox
15
41
56

Lengths in delaware watershed

#2670	57,0	(85.2)		20,3	412.09
Tohickon	52.2	(hon.)	2,2		
7731 →	54.8	(80.4?)		18.6	345.96
2355	54.2	(76.7?)	.6		
#2207	53,7	(no g.k.)	.5	18,9	357,21
2304	52,0	(78.7)	1,7	18,2	327,61
			2,3		
2480	49.7	(74,6)		18.7	349,69
#	48.7	(70.9)	1,0	18.4	338.56
6182	48.7	(73.5)	1,1	18.2	331.24
2695	47,6	(72.2)	2,3	18,2	331,24
2850	45,3	(66,5)		13.60	243,36
2481	45,3	—	.6	16.4	248.94
not	44.7	(63.2)	.4	15.2	231.04
2480	44.3	(66,1)		17.0	225.00
2829	44,3	(61.8?)	.2	15.50	240.25
4849	44,1	—		14.7 x.	216.09
3326	44,1	(63,8)	.1	14.2 x.	201.64
2281	43,9	(66.6)	.3	15.70	246.49
2427	43,7	(63,5)	.1	15.4	237,16
2292	43,6	(63.1)	.3	15,50	240.25
2553	43,3	(63.6)		15.70	246.49
2504	43,3	(63,4)	.1	15,1	228.01
2480	43,2	(62.6)	.8	14,8 x.	219,04
2537	42,4	—	.1	15.0	225,00
2537	42,3	—	.1	14.6 x.	213,16
2096	42,2	(61.2	.1	15,4	237,16
2303	42,1	(62,4)	.1	15,50	240,25
2096	42.0	(63,7	.7	15.2	231.04
4584	41,6	(62.8	.2	15,0	225,00
2219	41,8	(62,0)	.3	15,1	228,01
2679	41,3	(61,3)	.3		
2206	41,0	(58,7)	.2		
2480	40,8	(61,3)	.6	14.7 x	216,09
2066	40,2	—	.7		
2269	39,5	(56,4)	.8	14,2	201,64
2813	38,7	(58,1)		14.8 x	219,04

36) 1579,2 (438
144
139
108
312

16,0
31) 497.8
31
187
186
18

49 12 2
7993,70
3) 24780 4.84
21.7
308
279 60
298 5
279 54
114
93 38

80 9 13 8 14 7
7993.70
30) 80,07
2,64

√2,64 = 1,624808

4978
4978
39824
34848
44802
19912
24780484

100 S
M =
162,4808
16,0 =

√ = 10,1

10,155
16) 162 48 08
16
56
50
80

148) 20,30
44
50
37 06

mat/mr

Intervals for each element

1 Ulna # 2064 length 2.3 – 2.5 mm greater than next
Diff 1.1 – 0.1 interval
except but large & small groups only 1.1

1 ~~Humerus~~ #2670 " 4.8 " greater than next max.
Diff 1.7 – 0.1
And then 4.1 break bet. 74.6 & 76.7
Bet. large & small groups = 4.3

1 Tibiotarsus 5.7 " greater than next largest
Diff intervals 3.6 – .4 except
bet. large group & small = 9.2

1 Tarsometatarsus 5.3 " greater than next max
Diff 3.3 – 0.3
Possibly only one of large ones
(43.6) which is 5.3 greater
than the rest

7.2.64

Mandella Humerus length to end of deltoid tuberosity

n = 36

38.7, 39.5	39^2	78	3042
40.2	40^1	40	1600
40.8, 41.0, 41.3	41^3	123	5043
41.6, 41.8, 42.0, 42.1, 42.2, 42.3, 42.4, 42.4	42^8	336	14102
43.2, 43.3, 43.3	43^3	129	5547
43.6, 43.7, 43.7, 44.0, 44.1, 44.1, 44.3, 44.3, 44.7, 45.3	44^8	352	15488
45.2	45^1	45	2025
47.0	47^1	47	2209
48.7, 48.7	48^2	98	4802
49.7	49^1	49	2401
50.1	50^1	50	2500
52.0	52^1	52	2704
53.7	53^1	53	2809
54.2	54^2	108	5832
54.8	55^1	55	3025
57.0	57^1	57	3249
	$n = 36$	1296	73203

$\bar{x} = 36$

$\sigma^2 = 73203 - 72450 = 753$

$\sigma = 27.4$

$\sigma^2 = 753$

$\sigma = 27.4$

$\bar{x} = 36

Rn-proximal

14.2
14.7
15.7

15.7

Humerus Br. prox - all specimens (Maucalla S.D.) not just those with length ?, 27.65

20.3	412.09	20.3 ✓
20.0	400.00	20.0
19.3	372.49 ✓	19.3
18.9	357.21	18.9 ✓
18.7	349.69	18.7 ✓
	345.96	18.6 ✓
18.6	342.25	18.5
18.5	338.56	18.4 ✓
18.4	334.89	18.3
18.3	993.72	59.6 ✓✓✓
18.2 III		17.9
	320.41	17.8
17.9 I	316.84	17.5
17.8 I	306.25	17.3
17.5 I	199.21	16.4 ✓
17.3 I	268.96	32.4
16.4 II	531.38	32.4
16.2 II	488.84	32.2
16.1 II	259.21	15.9
15.9 I	252.81	31.6
15.8 II	499.28	62.8 ✓✓
15.7 IIII	985.96	46.8 ✓
15.6 III	730.08	46.5 ✓✓✓
15.5 III	720.75	30.8 ✓✓
	474.32	30.6
15.4 II	468.18	45.6 ✓✓
15.3 II	693.12	
15.2 III		45.3 ✓✓
	684.03	75.0 ✓✓✓
15.1 III	1123.00	
15.0 IIII	222.01	14.9
14.9 I	438.08	29.6 ✓✓
14.8 III		29.4 ✓✓
14.7 II	432.18	43.8 ✓
14.6 III	639.48	14.4
14.4 I	237.16	28.4 ✓✓
14.2 II	403.28	

265.69
244.44

249.64

234.09

added 4

added 4

added 10

added 17

OK 44

46) 705.6 (15.3
46
245
230
156
138
18

16) 306.7 (19.1
16
146
144
21

"large" totals

67
84
9
14 26
17
119
112
7

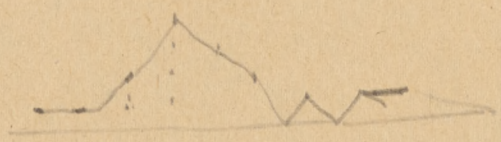
Mancalla pror b. lunens

14.2 – 14.4	—	3
14.5 – 14.7	—	6
14.8 – 15.0	—	8
15.1 – 15.3	—	8
15.4 – 15.6	—	8
15.7 – 15.9	—	7
16.0 – 16.2	—	4
16.3 – 16.5	—	3
16.6 – 16.8	—	0
16.9 – 17.1	—	0
17.2 – 17.4	—	1
17.5 – 17.7	—	1
17.8 – 18.0	—	2
18.1 – 18.3	—	4
18.4 – 18.6	—	3
18.7 – 18.9	—	2
19.0 – 19.2	—	0
19.3 – 19.5	—	1
19.6 – 19.8	—	0
19.9 – 20.1	—	1
20.2 – 20.4	—	1

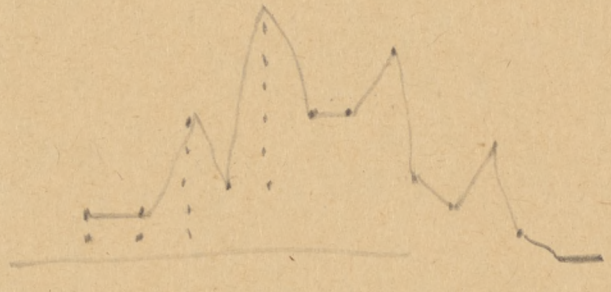
56.4 – 66.5 gr. length, 44 specimens
38.7 – 45.3 to deltoid

70.9 – 80.4 gr. length, 11 specimens
47.6 – 54.8 to deltoid
(or 47.0?)

85.2 – 97.0



14.2 – 3	2
14.4 – 5	2
14.6 – 7	5
14.8 – 9	3
15.0 – 15.1	8
15.2 – 3	5
15.4 – 5	5
15.6 – 7	7
15.8 – 9	3
16.0 – 1	2
16.2 – 3	1
16.4 – 5	1
16.6 – 7	0
16.8 – 9	0
17.0 – 1	0
17.2 – 3	1
17.4 – 5	1



7.25.64 San Diego Marcellus Farmers

N = 34' G. pref

56.4 14.2	14.0–14.4	2
63.8 14.2		
61.0 14.4 14.6	14.5–14.9	6
14.6 14.7		
63.8? 14.7		
62.8 14.8		
58.1 14.8 14.9		
15.0	15.0–15.4	11
62.0 62.8 15.0 15.0 15.0 15.0 15.1		
65.1 15.1		
61.3 15.1 15.1		
63.4 63.2 15.2 15.2		
62.8 15.2 15.3		
62.7 15.4		
63.2 15.4		
63.7 15.5	15.5–15.9	6
63.1 15.5		
66.1 15.5		
64.5 15.6 15.6		
65.0 15.7 15.7 15.7		
63.6 15.7 15.8		
16.4	16.0–16.4	1
15.9 16.1	16.5–16.9	0
16.2 16.3	17.0–17.4 (17.3')	0
	17.5'–17.9' (17.8')	0
78.7 18.2		
72.2 18.2	18.0–18.4	4
73.2 18.2 18.3		
70.9 18.4		
18.5	18.5–9	3
18.6		
80.4? 18.7		
74.6 18.9		
19.3	19.0–19.4	0
20.0	19.5'–19.9	0
83.2 20.3	20.0–20.4	1

5.1.65

1 56.4	56–57	1	1
0			
58.1	58–59	2	1
2 58.7			
0			
61.0			2
61.2	60–61	4	
4 61.3			
61.3			
62.0			
4 62.6			
62.7			
62.8	62–63	11	
63.1			4
63.2			
7 63.2			
63.4			
63.6			
63.7			
63.8			
0			
2 65.0	64–65	2	4
65.1			
66.1			
3 66.5	66–67	3	
66.6			
0			
0 69.0 68–69		0	
0			
1 71.9 70–71		1	
1 72.2	72–73	2	
1 73.5			
1 74.4	74–75	1	
0	76–77	0	
0			
2 78.0	78–79	3	
78.7			
1 79.0			
80.0	80–81	2	
2 80.0			
0	82–83	0	
0			
1 85.0	84–85	1	

33) 2193 (66.4
198
213
198
15

38.7	38–39	2	
1 39.5			1
40.2			
2 40.8			
41.0	40–41	6	
41.3			
4 41.6			
41.8			
42.0			
42.1			
42.2			
4 42.3			
42.4			
42.4			
43.2	42–43	12	
43.3			
43.3			
4 43.6			
43.7			
43.7			
44.0			
44.1			
6 44.1			
44.3	44–45	7	
44.3			
44.7			
1 45.3			
0			
1 47.0	46–47	1	
48.7			
2 48.7	48–49	3	
1 49.7			
0	50–51	0	
1 52.0	52–53	2	
1 59.7			
2 54.2	54–55	2	
0 54.8			
1 57.0	56–57	1	

85 .9294
64 .8195 V = 6
.1099

66) 85 .128
66
190
132
580

.151
56) 85
56
290
280
100

1.5 = .1761
2.0 = .3010
.1249

15) 200 .13
15
50

15) 3700 246
30
70
60
100

1.5) 200 .133
15
50
45
50

30) 5508 189
30
250
240
100
15

30) 4600 153
30
100

96) 11400 118.7
96
180
96
840
768
720

11.4 85 80
96 56 56
18 29 24

30) 47 .1
30
170

30) 89 .14
29) 43
29
140
116
24

70.9 5026.81
72.2 5212.84
73.5 5402.25
74.6 5565.16
4) 2912) 21207.06
2912
720
21194.36
1.70 = .2

291.2
291.2
5824
2912
24208
5824
4) 84797.44
21194.36

1.65 = 1000/n = V

728) 1640.1
1456
1840

Ulna length from interolecranon ridge (highpoint) to internal condyle

		est length
LACM 2064	32+	33.1 ✓
LACM unnumbered	30.1	30.8 ✓
LACM 2323	28.8	29.6 ✓
UC 45859	28.4	28.7 ✓
LACM 2287	27.9	28.5 ✓
LACM 2337	27.6+	28.6 (?) ✓
LACM 2439	26.7	27.3 (?)
UCLA 2345	26.5	27.3 ✓ new
Lacm 2497 (A)	26.1	27.0 ✓
Lacm 4424	26.3	26.5 ✓
UC 45842	26.3	26.6 ✓
Lacm 2484	25.7	25.9 ✓
Lacm 2082	25.6	26.1 ✓
UC 45853	25.3	25.9
Lacm 2497 (B)	25.3	25.7 ✓
Lacm 2129	25.0	25.3 ✓
LACM 2552	24.6	25.7
Lacm 2558	24.2	24.8 ✓
Lacm 2079	23.9	24.7 ✓
Lacm 2342	23.5	24.2 ✓

6 large

June 1969

✓ copied from various sources or I measured

June 1969

Revised V for small ulna
adding UCLA-2345

Total of 14 = 364.5

M = 26.0

$S^2 = 1.93$

$S = \sqrt{1.93} = \frac{1387 \times 100}{260}$

$5.3 = \sqrt{}$

Total squares 8770.0 + 7452.9 = 9515.39 − 949021 = 13 | 2511.81 | 193

$\frac{2X^2}{n-1}$ = eq. of $\frac{2aX^2}{n-1}$

S.D. measures of ulna — Feb 16, 1969

Length from tuberosity of radius to tip, condyle

2064	32.0	(33.1)	1024.00
2077	30.1	(30.8)	906.01
2323	28.8	(29.6)	829.44
45859	28.4	(28.7)	806.56
12287	27.9½	(28.5)	778.41

5)1472

29.4

4344.52

4333.56

4210.96

27.4 = σ²

1472 combined mean

3547 (26.4

19)5019

38

121

114

79

76

2345	26.8	(27.4)	702.25
2439	26.7	(27.4)	712.89
2497	26.1	(27.0)	681.21
26426	25.9	(26.5)	670.81
45842	26.3	(26.6)	691.69
2484	25.7	(25.9)	660.49
2497(2)	25.3	(25.7)	640.09
2082	25.6	(26.1)	655.36
25552	24.6	(25.3)	605.16
45853	25.4	(—)	645.16
2179	25.0	(25.3)	625.00
25558	24.2	(24.8?)	585.64
2079	23.9	(24.7?)	571.21
2342	23.5	(24.2)	552.25

8999.21

-8986.57

12.64

13)12.64

117

94

91

30

147.2

147.2

2944

10304

5888

14722

5)21667.84 (4333.56

2166784

5019

5019

45171

5019

19250952 | 13252.82

19 | 25190 3.6

19

61

57

49

38

110

95

53

38

156

152

41

S = 1.655 × 100 / 29.4 = 5.6

29.4)165.5

1470

1850

1764

8.5

224.72 (26.4

224

212

1352

1320

3547

3547

24829

19188

17735

10641

2,09 (8.86557

1258

112

138

126

121

112

92

84

80

70

109

104

9852

9852

19704

49260

78816

88668

97161904

3.9 = √

98.52

759

2262

2277

1.972 = σ²

9852 = σ²

revised to int. lysis 1

Ulva small Mancalla San Diego

17.19.65 DK

$n = 16$

24.2 – 28.7

$\Sigma x = 421.1$

$M = 26.3$

$\frac{(\Sigma x^2)}{n} = \frac{17732\,5.21}{26.3}$

16)421.1
32
101
96
50

16)1108282
17732 5.14
16
17
16
132
128
45
32
131
128
34

$\frac{28.7}{24.2}$ max/min = 118.3%

$\Sigma x^2 = 11109.33$

$-\frac{(\Sigma x)^2}{n} = 11082.82$

$n-1 \rightarrow 15)26.51(1.7673 = s^2$
15
115
105
101
90
110
105
50

$s = \sqrt{1.7673} = 1.3295$

$\frac{100s}{M} = \frac{132.95}{26.3} = 5.0$ ✓

Ulva large Mancalla S. D.

$n = 3$

29.9 – 33.1

$\Sigma x = 93.1$

$\frac{\Sigma x}{n} = 31.0$ = Mean

$\frac{(\Sigma x)^2}{n(3)} = \frac{8667.61}{2889.20}$

$\Sigma x^2 = 2895.63$

$-\frac{(\Sigma x)^2}{n} = 2889.20$

$2)6.43(3.21 = s^2$

$s = \sqrt{3.21} = 1.791647$

$\frac{100s}{M\ 31.0} = \frac{179.16}{31} = 5.78$ ✓

331

$\frac{29.9}{\text{min}}$ max = 110%

Ulva all (S. D.)

$n = 19$

24.2 – 33.1

$\frac{\Sigma x}{n19} = \frac{514.2}{19} = 27.0 = M$
38
134
133
1

$\frac{(\Sigma x)^2}{n19} = \frac{13915.87}{264401.64}$
19

$\Sigma x^2 = 14004.96$

$-\frac{(\Sigma x)^2}{n} = 13915.87$

$18)89.09(4.949 = s^2$
72
170
162
8

$s = \sqrt{4.949} = 2.2246$

$\frac{100s}{M(27.0)} = \frac{222.4}{27} = 8.2$ ✓

242)331
242
890
726
1640

1040
1458

max/min

7.23.65

Ulna Revised after study of 5 ulnas from El Toro 65.121
Ulna length from internal condyle to distal internal angle

7

29.5	→ 2.3	870.25
27.2	1.3	739.84
25.9	.4	670.81
25.5		650.25
25.5	.5	650.25
25.0	.2	625.00
24.8		615.04
		4821.44

7) 184.7 (26.3
14
43
1.1

$\frac{(\Sigma X)^2}{n} = \frac{33635.56}{7} = 4805.08$

-4805.08
$6)16.36$ (2.72 $= s^2$

$s = \sqrt{2.72} = 1.649242$

$\frac{100s}{M} = \frac{164.9242}{26.3} = 6.2 = V$

295 / 248 max/min = 120 90

13

23.7 V	.2	561.69
23.5 V		552.25
23.4 V	.1	547.56
23.4 V		547.56
23.4 V	.1	542.89
23.3 V		524.41
22.9 V	.4	519.84
22.8 V	.1	506.25
22.5 V	.3	506.25
22.5 V		488.41 ✓
22.1 V	.4	475.24
21.8 V	.3	466.56
21.6 V	.2	466.56
21.6 V		6705.27

13) 293.51 (22.7
26
35
26
91

$\frac{(\Sigma X)^2}{n} = \frac{87084.01}{13} = 6698.77$

-6698.77
$12)4.50$ (.541 $= s^2$
60
48
20

$s = \sqrt{.541} = .735527$

$\frac{100s}{m} = \frac{73.5527}{22.7} = 3.2 = V$

232 / 216 max/min = 1080

6705.27
4821.44
11526.71
11448.10
19)78.61 (4.13 = .02
76
26
19
71

2951
1834
20)478.5 (23.9
2944
2284.84
2)95.7
478.5
2284.84.0
478.5
20)22896.25
11448.1

$s = 2.03224$

$\frac{100s}{M}$ $\frac{203.224}{23.9}$

8.5 = V
23.9)203.224
1912
1202
1195

min/max 21.6/29.5

Lengths for these depths

Where depth prox. >.D

Both depths	Both.	wit depth	ext depth
9,3 −.3	6,5	9,1 −.2	10,2 −.1
9,0 −.3	6,5 −.1	8,9	10,1 −.3
8,7 −.1	6,4 −.5	8,9 .1	9,8 −.1
8,7 −.2	5,9 −.1	8,9 −.7	9,7 −.9
8,5 −.3	5,8 −.1	8,1 −.2	8,8 −.1
8,2 −.2	5,7 −.3	7,9 −.2	8,7 −.1
8,0 −.1	5,4	7,7 −.1	8,6 −.2
7,9 −.2	5,4 −.1	7,6	8,4 −.3
7,7 −.2	5,3 −.1	7,5 −.1	8,1 −.1
7,5	5,2 −.1	7,5 −.2	8,0
7,5	5,1 −.2	7,3	
7,5	4,9 −.1		
	4,8		

wit	ext
33,1 −2,4	29,5 −2.3
30,7 −1,0	27,2 −1.3
29,7 −1,0	25,9 .4
28,7 −.2	25,5 .2
28,5 −.1	25,5 .4
28,4 .1	25,0 .2
28,3 .4	24,8 .1
27,9 .1	23,7 .2
27,8 .1	23,5 .1
26,6 .3	23,4
26,3 .4	23,4 .1
25,8 .2	23,3 .4
25,6 .2	22,9 .1
25,4 −.1	22,8 .3
25,3 .8	22,5 .4
24,5	22,1 .3
	21,8 .2
	21,6

ext
30,7 −2,5
28,2 .9
27,3 .5
26,8 .1
26,7 .3
26,4 .1
26,3 .6
25,7 1.0
24,7 .3
24,4 .1
24,3 .1
24,2 .3
23,9 .4
23,5 .1
23,4 .2
23,2 .3
22,9 .2
22,7 .2
22,3

Either

9,6	6,5 −.1	9,3 −.2	10,3 .1
9,5	6,4 −.3	9,1 −.1	10,2
9,3	6,1	9,0	

El Toro ulnar length lat. % wt. corgla & wt condyle
from bx 65121

27.1	734.41
26.5	702.25
25.6	655.36
25.5	650.25
4) 104.7	2742.27
26.175	2740.52

$\frac{(\Sigma x)^2}{n} = \frac{10962.09}{4} = 2740.52$

27.1 / 25.5
max / min = 106 %

3) 1.75 (.583 = s^2

1.5
25
24
10

$s = \sqrt{.583} = .7635444$

$\frac{1005}{261} \quad \frac{76.35444}{26.175} = 2.91 = V$

2.91 = V

26.175) 76.35444
52350
240044
235575
44694

29.5 max S.D
26.1 mean ElToro
3.400
3052
3520

26.1 mean ElToro
24.8 min S.D bone
4.405 ×763.) 1.300 = 1

×763.)

.7635
3
2.2905 = 30

26.10
− 2.29
23.81

561 mean
21.6 min S.D femur
×7635) 4.5000. (5.8 %
38170
68300

parcel # & feature	gr. length	depth min	depth ext cond.	Br depth	
1	30.5	9.5	6.9	4.0	6.4
2	30.4	9.6	6.6	3.8	5.9
3	29.5	9.3	7.4	4.5	6.3
4	—	—	7.0	4.3	6.6

Ulua S.D Maurella (all) 7.17.65

DOOVER Review Pro

24.2	585.64
24.6	605.16
24.8	615.04
25.2	635.04
25.5	650.25
25.7	660.49
25.9	670.81
26.3	691.69
26.5	702.25
26.5	702.25
26.6	707.56
26.9	723.61
27.4	750.76
27.8	772.84
28.5	812.25
28.7	823.69
29.9	894.01
30.1	906.01
33.1	1095.61
	14008.96

total on addition machine

139.09.35

Σx^2 19)2440.64

19)5142(3

139.15.84

18)89.12(4.95 = a²

$\bar{x}$

n-1

72

171

162

92

90

$s = \sqrt{4.95} = 2.224860$

$\bar{x} =$

5142

331

4811

14004.96

1095.61

139093.5

12129

1839

27.0

19)5142

38

134

133

4811

4811

4811

4811

38488

19244

231.4571(12129

19

41

38

34

19

1541

38

160

132

24)3311

242

890

726

640

484

1560

1452

421.1

421.1

421.1

4211

8422

16844

177325.21

931

931

931

2793

8379

8667.61

13909.3

12129

1780

5142

5142

10284

20568

5142

1257.10

26440164

19)2440.64

74

57

174

171

30

19

111

95

166

152

14

136

Urea S.D. Lab

33.1
30.8
29.4
28.7
28.7
28.5

1095.61
948.64
876.16
829.69
823.69
812.25

6)179.4 (29.9
12
59
54
54

5380.04
5364.06

5)15.98 (3.196 = σ²

1.788 = R
5.9 = ✓

299)178.8
1495
2930
2691
239

8770.10
745.29
951539
9490.01
13)25.38 (1.95 = A²
13
123
117
68

179.4
179.4
7176
16146
12558
1794

(5.43072
6)32184 3
30
21
18
18

★ V from mean group with 27.3 added June 1969

273
273
819
1911
16546
74529

36455
36455
182225
174580
21870
10935
14)1328602 (949
126
56
126
02

179.4
179.4
7176
16146
12558
1794

6)32184 3 (536406
30
21
18
38
36
24
24
3

14
14
56
14
196

June 1969
Add #27.3 (UCLA #2345

small

27.8
27.3
27.0
26.5
26.6
26.1
25.9
25.7
25.3
25.3
24.8
24.7
24.2

27.4 x 3
0.2
26.4 x 3
25.8 x 2
25.3 x 2
24.6 x 3

4.0 = ✓

29)105.0
1036
140
14)3645 (260
28
84

750.76
750.76
75076
69696
69696
69696
66564
66564
64009
64009
60516
60516
6505180
8770682
87568.2
12)1312
1.05 = 2

82.2
7.92
5.16
7.38

1.04
1.04
416
104
1146

1787
1787
12509
14296
12509
1787
8193609
875682
13)11383876
104
98
91
73
65
88
78
107
104
3

1,7862
1,7862
3572
1071
1428
1250
1786
31905

3379
3379
13490
2361
10122
10122
13)113838 76 (

36

Ulua Cebus Island Mancalla

32.5	1056,25
32.3	1043,29
31.9	1017,61
31.8	1011,24
31.3	979,69
30.9	954,81
30.6	936,36
30.4	924,16
29.8	888,04
29.2	852,64
28.7	823,69

11)3394(308
104 47
11)1149 21
44
52
44
81

10472,03
10)15,75 = 1,575 = 0²

S= 1,253+
4,0 = ✓

30,8)1253,
1232
210

3394
339,4
13576
30546
10182
10182
11)115192,36(10472,03
11
51
44
79
77
22

10472,03
11)11519236
11
51
44
79
72
72
22
22
0

1,253
1,253
3759
6265
2506
221253
3157009

1,2529
1,2529
10976 1
25058
62645
25058
12529
15697841

Radii Marcalle San Diego 7.20.65

24.2 −.6
24.8
25.2 −.6
24.2 1.8
27.0
4)101.2 = 25.3M

585.64
615.04
635.04
729.00
2564.72

24.9 620.01 985 2426.33
24.2 585.64 220 729.00
25.2 635.04 1255 3155.33
24.2 585.64 251 3150.05
2426.33 4)99.5 5.28
2426.56 24.6 1.32 = σ²
37.17 6.1489 = r²
6
117
220
246

985
1188
8)2173 (27.1
16
57

22.2551 1.14
1.
12.551
246
91
1.279

29.4 876.16
31.8 1017.24
27.0 729.00
30.4 924.16
4)118.4 3540.56
297 −352836
3)12.20
4.05 = r

870.25
924.16
1004.89
279930

29.5 .9
30.4 1.3
31.7
3)91.6 = 30.5M

98.5²
242556
4)9702.25
9504
198
1188
4)141349
352836

201
201
404
40401

505
505
2525
255025
25225
2550.25

r = 2.015
297)201.5
1782
2330
76

985
1188
8)2173
27.1

4.5 = r small with 27.0 included
25.1)114.89
1004
1449
1255

1255
1255
4275
6275
2510
1255
5)15750.25 3150.05

1255
918
8)217.31

918
918
7344
915
8262
3)8427.24 2809.08
6
24
27
24

2811.56
315.33
59.6689

2426.33
3540.56
59.6689
59024
8)64.48
8.06 = σ²
10.4
27.1)2.83.90 14 = r
271
1290
1084

101.2
91.6
7)192.8
27.5

(Σx)² = 37171.84
n(7) 5310.26

2564.72
2799.30
536402
53 10.26
4)53.76 (8.96 = σ²
48
57
54
36

S = 2.993262
299.33
1005
n-275
9.15

M trial

102
275)299.33
275
243
275
683

2173
2173
6519
15211
21725
43446
8)47219.29
5902.41

OK

7.20.64

Mancalla na dii

22,9 min? based on ulnae

N=7

25.3
4)101.2

24.2 — 24 (1) 24
24.8 — 25 (2) 50
25.2 — 27 (1) 27
27.0 — 29 (1) 29
29.5 — 30 (1) 30
30.4 — 32 (1) 32
31.7

30.5
3)91.6

7)1928 (27.5
5266
7)36864
35
18
14
46
42
44

7) 192
M = 27.4

5310.27

7.20.64 → 5776 5895.69 5320 5266 615.04 (615.04) 6)54.1 error
7.18.65 → 729 729.00 Δ=3
841 870.25 V = 300/27.4 = 10,8
900 924.16
1024 1004.89
5320 5314.07 error
53.10.27
6)33,8 (5,63 = σ²
S = 2,32727
1005/275 232.71
2200
1270
1100
170

1320 = max/min

σ² = 9

24	1
25	2
26	0
27	1
28	0
29	1
30	1
31	1

24-25 3
26-27 1
28-29 1
30-31 1

July 16. 1965

24.2
24.8
25.2
27.0
ΣX 101.2
2560.36
(ΣX)²/4 4)10241.44
8
22
20
24

5895.64
4155.04
6351.04
729.00
2564.72
2560.36
3)4.36 (1.453 = σ²
3
13
12
16
15
10

A = √1.45 = 1.204159

max 27.0/24.2 = 1.1120
min

Small

100S/X = 120.4/25.3

4.7
25.3)120.40
1012
1920
1771
31.7
max
min 29.5

29.5
30.4
31.7
91.6
ΣX
(ΣX)²/3 8390.56
2796.85

870.25
924.16
1004.89
2799.30
2796.85
2)2.45 (1.225 = σ²

S = √1.225 = 1.104536

100S/V = 110.45/30.15 = V

3.6
305)1104.5
915
1895
1830

radius

30.0 900.00

29.5 870.25

large 28.0 784.00

3)87.5 2554.25

M 29.1

25.8 665.64

25.0 625.00

small 23.6 556.96

23.5 552.25

4)97.9 2399.84

M = 24.46

max min 127.5 rad. ulna

" " 136 ulna

29.5

27.2

34596

34225

2)3741

1875

34225

125

37410

21.6

1.05

1.05

525

105

1102.5

1.13

2.13

339

113

113

1,2769

large $\frac{(\Sigma X)^2}{n} = \frac{7656.25}{3} = 2552.01$

$\frac{100S}{M} = 291)10584.301(3.7 = V$

873

1553

1476

2554.25

2552.01

n-1 2)2.240

1.12 = σ^2

S = 1.058301

small $\frac{(\Sigma X)^2}{n}$ $\frac{9584.41}{4} = 2396.10$

$\frac{100S}{M} = 244)11135.53(4.5 = V$

9784

1351

12230

2399.84

2396.10

n-1=3)3.74(1.24 = σ^2

S = 1.113553

875

97.9

7)185.4(26.48

17

45

42

34

28

60

$\frac{(\Sigma X)^2}{n}$ 7)3441.0

28

64

63

1

40

49

2554.25

2399.84

495409

491500

n-1=6)39.09(6.518 = σ^2

36

31

30

10

6

49

S = 2.553429

$\frac{100S}{M} = 264)255.34.29(9.6 = V$ for all

2383.2

17022

15884

Capus mandla sums

7.16.65

1 29.6 29.7
2 30.7 31.0
3 31.7 31.4
4 32.7 32.8
5 33.0 33.2

Σx 5) 157.7 (31.5 = M

$(\Sigma x)^2 = 24869.29$

$\frac{(\Sigma x)^2}{n} = 4973.86$

846.16
942.49
1004.89
1069.29
1089.00

4981.83
−4973.86

4) 7.97 = 1.99 = s^2

(n-1) 3

$s = 1.410674$

297
310 30.7
316
326
309
332
6) 1105
6) 189.0 (31.5

max/min = 111

157.7
310
6) 1587 (31.45
18
27
24
30

$\frac{4,446}{315} = V$

315) 1410674
1260
1506
1260
1467
1260
2070

Large

X	meas 1969	X^2	
35.0	35.0	1225.00	1225.00
35.3	35.3	1246.09	1246.09
35.6	35.6	1267.36	1339.56
36.0	35.9	1296.00	1296.00
37.1	36.1	1376.41	1451.61
	5) 180.8 (36.1	6430.86	6558.26
		−6408.50	−6537.73
		4) 22.36 = 5.59 = s^2	4) 20.53 = 5.13 = s^2 (1969 meas)

max/min = 106

Σx 5) 179.0 = 35.8 = M

15
29
25
40

$(\Sigma x)^2 = 32041.0$

$\frac{(\Sigma x)^2}{n} = 6408.5$

$s = 2.363 = s$ X 100 226.3

$s = 1.509$

$s = 1.536811.46$

$V = \frac{76.8}{35.8} = 2.1$ Large

2.1
35.8) 76.80
716
520

1577
1573
11039
11039
7885
1577
5) 2486929 (497386
20
48

157.7
2.8
3150
1410

1577
1573
11039
11039
7885
1577

1808
1808
14464
14464
1808
5) 32686.4
6537.73

180
18
1440
1440
0
0

6.2
361) 2263.
2166
970

1577
31.3
1890

313
313
939
313
939
979.69

381
381
3048
1143
1451

366
366
2196
2196
1098
1339.5

4981.83
979.69
5961 52

... campus mancalla (all) S.D 7,17.65

N=10

29.7	29.6	876.16
30.7 / 31.0	30.7	942.49
31.6	31.7	1004.89
32.8 / 32.2	32.7	1069.29
33.2	33.0	1089.00
35.0	35.0	1225.00
35.3	35.3	1246.09
35.6	35.6	1267.36
36.0	36.0	1296.00
37.1	37.1	1376.41

ΣX 336.7

$\bar{X} = 33.6$

$(\Sigma X)^2 = 113366.89$

$\frac{(\Sigma X)^2}{n} = 11336.689$

11392.69
11336.68
9)56.01 (6.23 = s^2

$s = 2.493993$

29.6 ①
30.7
31.0
31.7 ④
32.7 ⑧
33.0 ②

882.09
942.49
961.00
998.56
1075.84
1102.24
5962.22
5)1809
361

1890
1890
0000
1701 0
151 20
1890
595350

5967222
5953.50
5)13.72
s^2 = 2.74

s^2 1.32
4.1 = √
315) 1320 (4 smaller June 1964
1260
60

35.0 — 1225.00
35.3 — 1246.09
36.0 — 1296.00
36.5 — 1332.25
38.1 — 1451.61
11) 3496-9 (33.4
12 4 4 3 7 7
-12418.53
10) 75.25 (7.52 = s^2

$2x^2$ 6550.95
$-\frac{(\Sigma x)^2}{n}$ 6544.96
$2s^2$ 5.99
s =

2.75 = √ s = 8.1

$\frac{100}{\bar{X}} = \frac{249.39}{33.6} = 7.4$

37.1 max / 29.6 min =

7.4
336) 249.39
2352
1419
1344
11

2.75
275
1375
1925
550
7.5625

8.1 = √
336) 2749
2688
3610

125 90
296) 371
296
750
592
1580
1480
67
361) 2430
2166
2640
2527

3804.9	25	24
3180.9	25	24
16281	125	96
14472	50	48
1809	625	576
5) 32 7 24 81		
65 4496		

2.47	245	244
2.47	245	244
1729	1225	976
98.8	980	976
494	490	488
61009	60025	59536

318.0	369.6
31.8	36.96
0.60	221.76
3.18	332.64
0.30	221.76
96.100	110.88
365	11) 13660.56
365	12418.53
1825	
2190	
1095	
133225	
381	
381	
381	
3098	
1143	
145161	

Femur intercondylar length

2507 58.6 cm
Tahe 58.1
2038 52.0 cm
UCLA 2320 51.5
2072 50.6 cm
UCLA 2345 48.4
2047 48.5 mm

357.3 / 51.0

2872.96
2819.61
2704.00
2652.25
2500.00
2361.96
2352.25

18263.03
18237.61
125.42
4.23 = a²

a = 2.056 × 100 = 205.6

357.3
357.3
10719
25017
17865
10719
7) 1276 63.29 (182376 1

18263.03
− 8076.96
10186.07
10170.72
3) 15.35
4.4 07
5052 25.1
2020
2310

2872.96
2704.00
2500.00
8076.96

7188
7188
57504
57504
7188
50316
15) 516673 (34444 9
45
64
60
64
60
4

202.1
202.1
2021
4042
4042
4042
4042
4) 40844.41 (10211.10
4
08
04
44
41
40
1

Sub 1564

357.3
1.5.6
4) 2017 (504.5

201.7
201.7
1411 9
2017
40340
4) 4068259
1017072

357.3
361.5
15) 7188 (479
60
118
105
138
135
3

7.3
3549.0
3353
1470

182.63.08
163.52.11
34615.19
34444.90
14) 170.29 (12.16 = a²
14
30
28
22
a = 3.49

47.3
46.6
46.5
45.2
44.8
44.4
44.1
42.6
8) 361.5
45.2

2237.29
2221.56
2162.25
2043.04
2007.04
1971.36
1944.81
1814.76
16352.14
16335.28
7) 16.83 (2.40 = a²
14
28
V = 3.4

361.5
361.5
18075
3615
21690
10845
8) 130682.25 (16
8
50
48
2

201.7
361.5
12) 563.2 (47.0
48
83
84

563.2
563.2
11264
16896
337.92
281.60
12) 3171.94 (11.29
24
77.1
72
51
48
39
36
34
21
12
9
6
4

10186.07
16352.11
26538.18
− 26432.85
11) 105.33 (9.575
99
63
55
a = 3.0935
8
47.13093
2

Elia Pranzella

98.7	9741.69	
94.0	8836.00	
93.1	8667.61	
92.9	8630.41	
92.0	8464.00	
91.6	8390.56	
82.4	6789.76	
80.8	6528.64	
725.5	66048367	
90.7	6579378	

725.5
725.5
36275
36275
14510
507885
8) 526350 25
6579378

8) 52635025
48
46
40
63
56
75
72
30
24
62
56
65

6.04
6.04
2416
3624
36.48 16

6.035
6.035
30175
18105
36210
3641.225

7) 254.89 (36.41 = A² A = 6.035

21
44
42
28

6.035 x 100 = 603.5
4.6
90.71) 603.5,
5443
5930

1325.7
1325.7
92799
66285
26514
39771
13257
16) 7574 8049 (10984 = 2³
16
157
144
137
128
90
80
104
96
8

July 1969

925.5
604.2
16) 1325.7 (82.8
128
45
32
137

2286	77.3	5975.29
2345	76.9	5913.61
2549	76.7	5852.89
2478	76.5	5852.25
2083	74.4	5533.36
2088	73.9	5461.21
2628	72.5	5256.25
2209	72.0	5184.00
8) 6042		45060.86
75.0		45030.00

600.2
600.2
1200.4
3601.2
8) 36024.0 x
4503.000

60048.67
45060.86
111109 53
109842 28
17) 1267.25 (74.48
120
67
60
72
68
25

n-1 = 7) 30.86 (4.41 = λ²
28
2.1 = λ

2.1 x 100 / M

2.1
75) 210.0
150
600
600

89.05
2.05
14525
241450
58105
8939025

2.1
75) 210.0
150
600

11 carried
82.8) 9191.0
825
910
828
82.0

9.2
9.2
92
184
828
84.64

9.18
9.18
7344
918
8262
84.272

9.19
9.19
8271
919
8271
84.461

42.6 — 1814.76
44.4 — 1944.81
44.4 — 1971.36
45.0 — 2025.00
44.8 — 2007.04
45.2 2043.04
46.6 2171.56
47.3 2237.29
48.5 2352.25
48.6 2361.91

45.71 18885.98
2043.04

20929 02
20894.04

9)34.98(3.88 = r²
27
79
72
78

Aug. 3, 1969
Lemur S.D. Marcella 45.71

45.71
45.71
31997
22855
18284
2089.4041

s = 1.969772 × 100/M = 196.9772/45.7

4.31 = r
45.7)196.9772
1828
1417
1371
467
457
10

53.6 2872.96
53.1 2819.61
52.0 2704.00
51.5 2652.25
50.0 2500.00

5)260.2 13548.82
52.0 13540.80

4)8.02
2.00 = r²

2602
2602
5204
15612
5204
5)67701.04
13540.80

s = 1.417214 × 100/M = 2.72/52)141.4214
104
374
364
102

45.71
2602
15)71.173(4.78
60
117
105
123
120

18885.98
13548.82
32434.80
2043.04
34477.84
34301.28
14)176.56(12.61
14
36
28
85
84
1

3.6
3.6
216
108
1296

7173
7173
21519
50211
7173
50211
15)514519.29(34301.28
45
64
60
45
45
19
15
42
30
129
120

r² = 3.58
r = 1.9
17)38.01(2.24
34
40
34
60
51
9
8
1

Revised femur - vastly lugth from intercondyla space to middle of pubx. end (bet. head + trochanter)

42.6	1814.76
44.0	1936.00
44.4	1971.36
44.8	2007.04
48.5	2352.25
224.3	10081.21
44.8	10062.10
M	19.11 (4.77

$S = \sqrt{4.77} = 2.184033$

$(\Sigma x)^2 = 50319.49$

$\Sigma x^2 = 10062.09$

52.5	2756.25
53.1	2819.61
105.6	5575.86
52.8	5575.68

$105.6^2 = 11151.36$

$\frac{100S}{M} = \frac{218.4}{44.8}$

$\frac{100S}{M} = \frac{425.3}{47.1}$

$52.5^2 = 2756.25$

$53.1^2 = 2819.61$

224.3	50176
105.6	449
329.9	50400.5
47.1 = M	

$225 = 50625$

$224 = 50176$

$224.5 = 50400$

$(\Sigma x)^2 = 108834.01$

$\Sigma x^2 = 15547.71$

$S = 4.253$

3299	4253
3299	4253
29691	8506
29691	21265
6598	18504
89724897	17008
44862	108834.0
44862	180795 04
5031049	

January June 1969 (intermediate) Results

January 1964

486	2361,96
474	~~2301,20~~
466	2171,56
452	2043,04
448	2007,04
444	1971,36
440	1944,81
426	1814,76

)36 37

June 22 1944
Jamaica

717.1
7171
7171
50197
7171
50197
15)514232.1(34282.14
45
64
60
42
30
125
120
32
30
24
15
91
90

4089
4089
36801
32712
163560
16719921

16.7
41
41
41
164
1681

409
409
3681
1636
16721

408
408
3264
16320
166464

8.5
428)40880
3827
2640
2390
2568

Femur Mandala small

7.16.65

44.9
46.7
47.3
3)138.7
46.2
641256
3)19237.69
18
17

1998.09
2180.89
2237.29
641627
641256
2)4.71 (2.355
4 = 1.532971
33
462)15312.
1386
1460
1386

153.2 = V
46.2

Large

50.7
54.2
55.8
3)160.4
53.3
8569.38
3)25708.16
24
17
15
20
18
28
21
11

2540.14
2937.64
3113.64
8591.44
8569.38
2)22.06
11.03 = 22

max 55.8/50.4

1 = √11.03 = 3.316625
6.2
533)3316.
3198
1180

441 × 441 = 194481

466 × 466 = 217156

486 × 486 = 236196

452 × 452 = 204304

473 × 473 = 223729

3636 × 3636 = 13230496

363 × 363 = 131769

367 × 367 = 134689

5.1 × 5.1 = 26.01

5.15 × 5.15 = 26.5225

5.12 × 5.12 = 26.2144

1.81 × 1.81 = 3.2761

1.9 × 1.9 = 3.61

1.92 × 1.92 = 3.6864

1.93 × 1.93 = 3.7249

45.4 × 45.4 = 2061.16

42.5 × 42.5 = 1806.25

38.55 × 38.55 = 1486.1025

48.61025 × 8 = 388.8820

Yo

5.15 × 5.15 = 26.5225

2764 × 2764 = 7639696

7639696 ÷ 5 = 1527939

1.2 × 1.2 = 1.44

Fermoa

Nov 1969

2507	52,0	3249,00
Tyhu	56,3	3169,69
2078 ?	55,0	3025,00
2220	54,3	2948,49
2672 ?	53,8	2894,44

2764 ÷ 5 = M. 552 — 15279,39 ÷ 4 = 1,577

6,31 ÷ 4 = 1,5775

1,2529 = ∞

2,2 × 55,2 = 1215,29 − 1104 = 1489

45,0	2025,00	
46,0	2116,00	
47,0	2209,00	
47,3	2237,29	
48,9	2391,21	
49,8	2480,04	
50,4	2540,16	
51,1	2611,21	
385,5	18509,97	
48,1	18576,27	

385,5 × 385,5 = 148610,25

148610,25 ÷ 8 = 18576,27

3364 ÷ 7 = 480,57

4,57 ÷ 2,1 = ∞

219,0 ÷ 48,1 = 4,55

7.20.64

Mancalla femur max length

n=6

44.8	44	1936
46.7	46	2116
47.3	47	2209
50.4	50	2500
54.2	54	2916
Type 56.3	56	3136
	6)297	14813
	49	

M = 49.5

14701

6)88209

6
28
24
42

14813
14701
112/5 = 22.4 = n²

r = 4.74

V = 474/49.5 = 9.56

125% = max/min

49.5
9.48
58.98

125
448)5630
448
1150
896
2540

Mancalla femur depth ext condyle

n=11

8.7	86-8.7-1	87-88 2
8.8	88-89 2	8990 2
8.9	90 91 1	91-92 0
9.0	92 93-0	93 94 1
9.4	94-9.5-1	95 96 1
9.6	9.6-9.7-1	9758 1
9.6	9.8-99 1	9910 0
9.8	10. 10.1 2	101-2 2
10.1	10.2-10.3 1	103-4 1
10.1	10.4 10.5 1	105- 1
10.1		
10.3		
10.5		

11)105.5 (9.56
99
62
55
70

Femur b. distal

8.7	86-87 1	87-88-3
8.8	8889 2	8990-1
8.8	9091 2	91-92-1
9.0	9293 2	93-94.2
9.1	9495 0	95-96-1
9.3	9697 0	97-98-0
9.6	9899 0	99-10 0
10.3	10-101 0	101101-0
10.5	102-103 1	102-3 1
10.8	104-105 1	104-5 1
11.1	106-107 0	106-7 0
11.3	108-109 1	108-9 1
	11-111 1	11-111 1
	112 11.3 1	112113 1

Femur rest'd length including

n=15

2848	44.8 ✓	44-45 - 1
UL 48851	46.0 est	46-47 - 5
2508	46.7 08 ✓	48-49 - 0
3185	47.3 ✓	50-51 - 2
3221	47.0 est	52-53 - 0
2244	47.0 est	54-55 - 7
2097	50.4 mt ✓	56-57 - 2
2227	51.6 est	58-59 - 1
multi 2220	54.2 ✓	
uc 45-891	54.2 est	
2078	55.0 est ✓	
2137	55.0 est	
TYPE	56.3 ✓	
2507	56.2 est = K 59.8	
3668	58.0 est	

15)7702 (51.3
75
20
15
52

add 54.6
6)2788
24
38
32
28

54.6
2
9)4914
45
41
36
54

118
464)5460
464
820
464
3560

190
473)5630
473
900
473
4270
4257
130
1

June 1969
Marcella
Laur
San Diego
Physics

2548 42.6 V 1817.74 OK
1508 44.1 V 1971.36 OK
4538.1 44.1 V 1944.81 OK
2185 44.8 V 2007.04 OK
024 45.2 V 2043.04 OK
253 46.6 V 2171.56 OK
139 47.7 V 2276.76 OK
2345 48.6 V 2361.96 OK
~~2097~~ ~~48.0~~ ~~2304.00~~
2220 51.5 2652.25 OK
the 53.1 2819.16 OK

11) 0163 24332.70
46.9 - 24233.24
10) 99.46
9.946 = R²
3.153 = Ω

100P / 469 = V 3153 / 46.9

516.3 24332.70
480 - 23040.00
468.3 2202870
-21930.48
9) 98.22 (10.917
9819

10.91 = Ω²
3,304 = S
1005 / M 330.4 / 468 = V

7.0
468) 330.4
3276
+2.80

3305
3305
14525
9915
9915
10,923025

48
48
384
192
2304

474
474
1896
3318
1896
224676

466
466
2796
2096
8864
217156

515
515
2575
515
2575
265225

125
426) 531
426
105
8

Intermediate steps
516.3
516.3
15489
30978
5163
2581 5
11) 26656569
24233 24

315
315
1575
315
945
9922
69

3153
316
1896
316
948
9985
3153
9459
9941409

469) 3153
2814
4390
4221
468.3
14049
37464
28098
18732
219304890

516.3
516.3
15489
30978
5163
25815
11) 26656569
296184 1

3306
3306
19836
9918
9918
10929436

325
325
1625
650
975
105625

3308
3308
26464
9924
9924
10,942864

331
331
993
993
10,954 1

332
33
99
99
10,89946
11022

42.6
44.1
44.4
44.8
45.2
46.6
47.3
48.6

Jenora
June 1964
8 small
2 large
for keys

Br distal end

Bishop

3636 total sum
51.4
53.1 total calf
468.1
46.8 Mean

8.2
9.2
9.3
9.3
9.3
9.5
6)54.8 (9.1
10.2+
10.4+
11.0+
11.2+
11.4+
5)54.4
10.8

3.9✓
3.9✓
4.0✓
4.1✓
4.1✓
4.2✓
4.2✓
4.9✓
5.0✓
5.1✓
5.3✓
5.5✓
5.5✓
5.5✓
5.8✓
5.8✓
5.8✓
6)34.0
5.6

42.6 4.1 1814.76
44.1 3.9 1944.81
44.4 3.9 1971.36
44.8 4.0 2007.04
45.2 4.1 2043.04
46.6 3.9 2171.56
47.3 4.2 2237.20
48.6 4.2 2361.96

51.4 5.8 16581.73
53.1 5.5 16525.62
26.11

3636
459

16551.73
2819.61 53.1²
2652.24 51.5²
2202359
219176 2x²/n
n-19) 111183 (12.42=σ²
13.73=s²
1.93=s
193
45.4

√12.42=3.526
100s=V
M
468) 352.6

4.4
11) 48.7

5.6 cadmium
6.7

515
531
2) 104.6
52.3

10

small
45.4) 193.0 (4.2=V
1816
1140

3529
3529
31761
7058
17647
10587
12453841

353
353
1059
1765
1059
124609

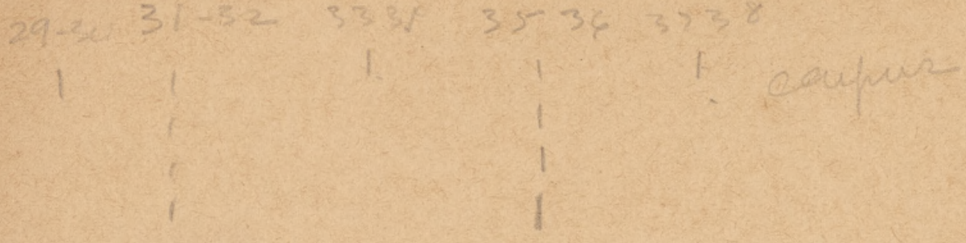
355
355
1775
1775
1065
126025

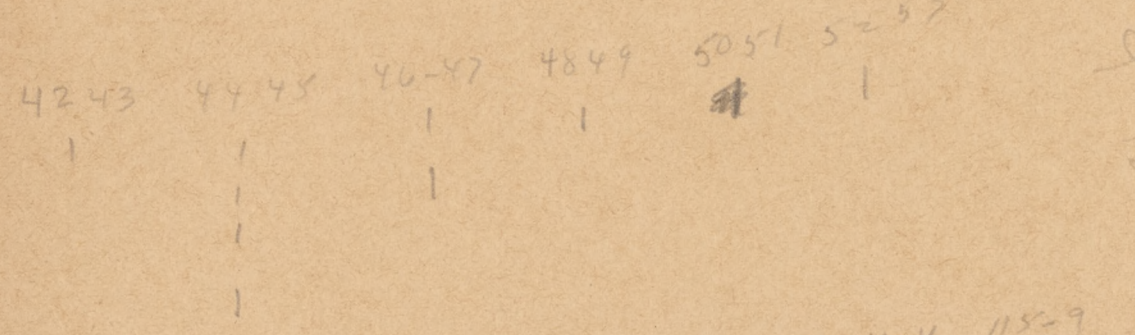
4681
4681
4681
37448
28086
18724
21911761

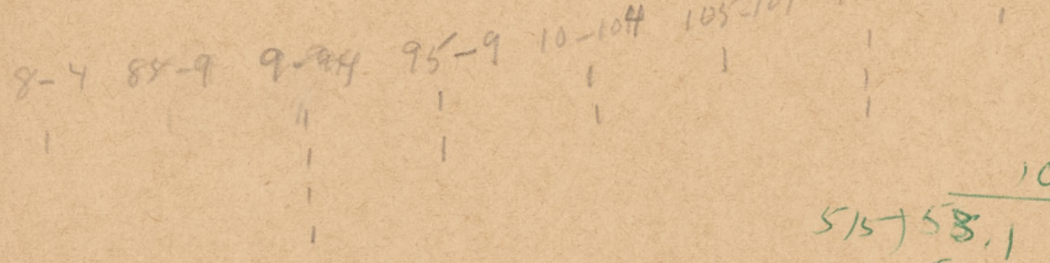
2x²

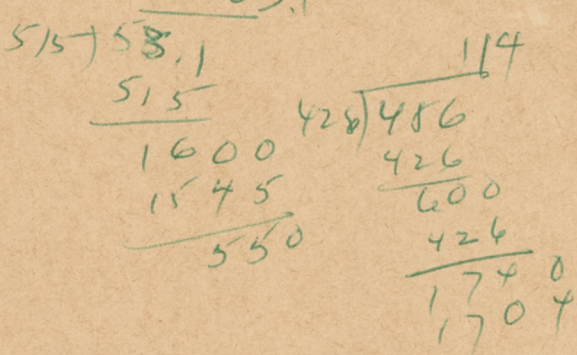
7.5
468) 352.6
3276
2500
2340
1600

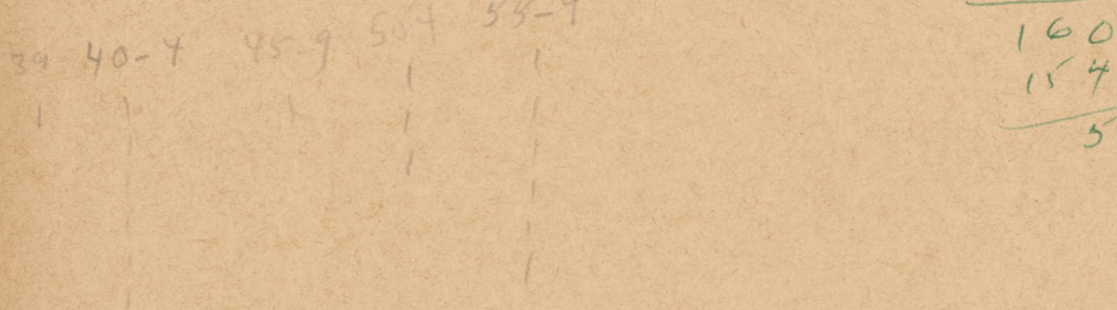
35 36
35 36
175 216
105 108
1260

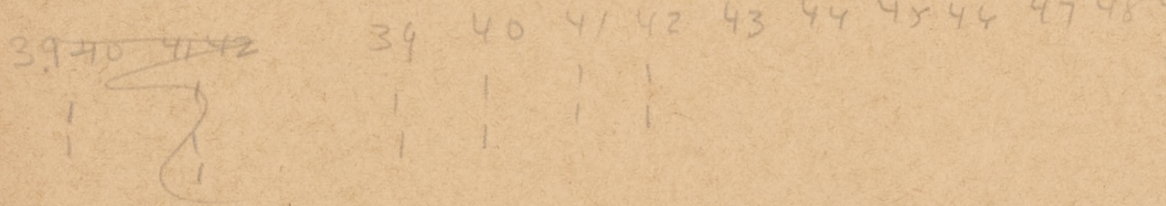

29-30 31-32 33-34 35-36 37-38
campus

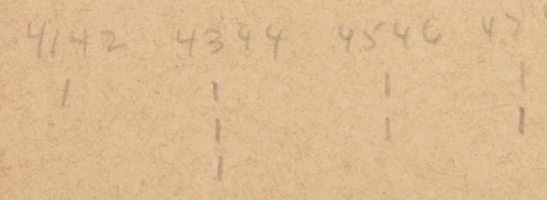

42 43 44 45 46-47 48 49 50 51 52-53
length
four
by dirt


8-4 85-9 9-94 95-9 10-104 105-109 11-4 115-9


103.1
515 53.1
515
1600
1545
550
114
426 486
426
600
426
1740
1704


39 40-4 45-9 50-4 55-9


39 40 41 42 43 44 45 46 47 48 49


41 42 43 44 45 46 47 48 49-50 51 52 53 54

3607 57.0 3249,00

2416 56,3 3169,69

2220 54,2 2937,64

2672 53,8 2894,47

57260 55,2

15242,86

15235,00

7,86

1,96

2345 51,1 2611,21

2097 50,4 2540,16

139 49,8 2480,04

253 48,9 2391,21

2227 47,8 2284,84

024 46,8 2190,24

2185 42,3 2237,29

2508 46,7 2180,89

2451 46,0 2116,00

284 44,9 2016,01

10)4797 22047,89

47,9 23011,20

9)36,69

4,07 = 2

Lewis S.D

2,4 276

1,4 1656

56 1932

4 552

1,96 5)76174

15235

2,5

552)1400

1104

2960

2760

38072,16

15)571082,49

45

121

120

108

105

32

30

24

8

49

4797

4797

33579

43173

33579

191188

230112,09

4797

276

15)75571 50,3

75

57

15242,86

23047,89

38290,75

38072,16

14)218,59(15,61

14

78

70

85

84

1

503)15610

7,8

503)3950,

3521

4290

4024

2660

2,019424 = 2

4,2

479)2017,424

1916

1014

395

395

1975

3555

1185

156,0

3,9

39

351

117

15,21

38092,16

7555

7555

52899

37785

37785

52899

38072,16

15)571082,49

45

121

120

108

105

32

30

24

8

99

43.7
383
379
3)1197
39.9

1969.69
146689
142129
479787
4776.03
2)21.84
10.92 = a²

331
331
331
993
9938
109561

99
99
1089

11.97
11.97
8379
10773
1197
1197
143.2809

39.9 × 3.309 = 132.0291

4776.03
3)14328.09
12
23
21
22
21
18
18
0

S.D. femora Aug. 22 1969

-2507	57.0	3249.00
Tyne	56.3	3169.69
2220	54.2	2937.64
2672	53.8	2894.44
4)2218		12250.77
554.5		

UCLA 2345	51.2 V	2621.44
2097	50.4 V	2540.16
139	49.8	2480.04
253	48.9	2391.21
2270	47.8	2284.84
2185	47.3 V	2237.29
024	47.2 V	2227.84
458851	46.0	2209.00
2508	46.7	2180.89
2347	44.9 V	2016.01
10)481.2		23188.72
M 48.1		23155.34
2508 46.7 ✓		9)33.38
2347 44.9		3.71 = s²

r = 1.926

48.1) 192.6 — 4.0 V small

1924

Cedros

1284 L	56.5	3192.25
1284 R	55.1	3036.01
15373	54.8	3003.04
3)166.4		9231.30
55.4		9229.65
		2)1.65
		.84 = s²

r = .9165 — 1.6

55.4) 91.65

554

3625

12250.77
12243.42
2)7.35
3.45

r = 1.565248 — 3.8 V last

553) 1565.248

1108

4622

4224

127 max min both

2213
2213
6639
2213
4426
4426
3)5897369
1224564

3.25
325
1625
650
975
1056.25

12250.77
2388.72
3543949

3543949 — sum sq both

35250.44 — 14.54 = s²

13) 189.05

13

59

52

70

65

55

52

3.81 = s²

7.6 V both

50.1) 381.00

350.7

3030

221.3
481.2 M
14) 7025 (50.1 both
70

481.2
481.2
9624
4812
38496
1924.8
10)231553.44

1664
1664
6656
9984
9984
1664
3)27688.96

7025
7025
35125
14050
491750
14)99350625 (35250.4
73
70
35
28
70
70
62
56
60
4

381
381
3081
3048
11143
14516

S. D. Tarsuo aug 22 1969

36.1
35.8
34.8
32.6
31.1
5) 170.4
34.0

7.8
40) 318.1
280
380
3) 1200
1200
3) 1470000
4801.00

437
380
383
3) 1200
40

1909.69
1444.00
1466.89
4820.558
4800.33
20.25
10.12

481333
3) 14400
12
24
24
4
3
10
9

318
318
2544
318
954
101124

1909.69
1466.89
1436.41
481299
479200
2099

4813
4792
21

4.6
400) 1849.324
1600
2493

43.7
37.3
383
3) 1193
39.9

1909.69
1391.29
1466.89
476787
4727.49
2) 79.98
20.25

190969
142884
146689
480542
478401
2) 2141
10.70

1198
1198
9584
10782
1198
1198
3) 1435204
478401

1195
1195
5975
10755
1195
1195
3) 1428025
476008
477934

1193
1193
3579
10737
1193
1193
3) 14182749
4727.49
40
97
39.9

3.27
399) 3270.1
2598

3.37
399) 3370.1
7.
40) 337
1
M.498.1

1199
1199
10791
10791
1199
1199
3) 1437601
479200
428401
799

4.491
4491
4491
40419
17964
179604
2016081

4498
4498
35984
40482
17992
17992
202320.4

119.5
119.5
5975
10755
1195
1195
3) 1428025
12
22
21
18
18
025

32
32
64
96
1024

33
33
99
99
1089

325
325

337
337
2359
1015
101125
1135.69

Manealla Silin (all)

S.D

7.17.65

N=14

71.5 x	5112.25
72.8 x	5299.84
73.4 x	5387.56
74.6 x	5565.16
76.3 x	5821.69
76.7 x	5882.89
77.2	5959.84
80.8	6528.64
82.2	6756.84
91.4	8353.96
92.2	8500.84
93.0	8649.00
93.0	8649.00
98.7	9741.69
1153.8	95089.60

138

715) 987

715

2720

2145

5750

5720

987 max / 715 min =

11553.8

5

14) 11 : 5 x 3 (82.4

1 22

34

28

63

56

7

Σx 14) 1153.8 (82.4

112

33

28

58

56

20

$\frac{(\Sigma x)^2}{n} = \frac{126}{91}$

70

125

808

822

1630

1 : 4

13) 1119.60 (86.12 = a^2

104

79

78

16

13

30

$a = \sqrt{86.1} = 9.279009$

95089.60

Σx^2 14) 13312.54.44

$\frac{1005}{X} = \frac{927.9}{82.4} = 11.26$ ✓

11.26

824) 927.9

824

1039

824

2150

1648

5020

108

914) 987

914

7300

7312

114

720) 822

720

1020

720

3000

6528.64

4756.84

13285.48

52314.77 − 13285.48

39029.29

39000.89

6) 28.40

4.733 = σ² small

71.5 − 77.2

6885.5

163.0

7) 522.5

74.6 M small

522.5

522.5

26125

10450

10450

261125

7) 3006625

39000.89

25

25

125

50

21

21

21

42

441

2.17

2.17

1519

217

434

47089

2.18 = a

29

746) 2180.

1492

6880

22

22

44

47

452

2.19

2.19

1971

219

438

47961

2.18

2.18

1744

218

436

47524

47333

191

47333

47089

244

631.3

631.3

18939

6313

18939

3787.8

7) 3985 39.69 | 56934.27

35

48

47.5

63

28

29

Large includes 80.8 T 82.0

468.3

80.8

822

7) 6313

M 90.1

438 94.49

6528.64

6756.84

57179.97

−56934.24

6) 245.73

40.95 = σ²

Nov 1964

Δ = 6.4

7.1 = V large with 80.8 included

90.1) 640.0

630 7

1030

5704251

5693427

7.24

57272.47

57179.97

92.52

6315

6315

31575

6305

10

32890

7) 38 1752.25

5439318

Tdea Mancalla (small) 7.16.65

08—

72.0
77.5 1.7
72.8 .6
73.4 1.2
74.6 .7
76.3 .4
76.7 .5
77.2 3.6
80.8 −1.4
82.2

685.5

M = 76.1

$(\Sigma X)^2 = 469910.5$

n=9

5184.00
5112.25 6.75
5299.84
5387.56
5565.16
5821.69
5882.89
5959.84
6528.64
6756.84

52 534 134.75

52212.27

8110.244 | 12.805 = σ²

S = 3.577709

max/min 90 =>

11 49

715 822
715
1070
715
3550
2860
6900

98.7
max
745 total
min
138

715 | 987
715
2720
2145
5750
5720
745

$\frac{100S}{761} = \frac{357.77}{761} = 4.7$

4.7
761 | 357.77
3044
5337
5327

$\Sigma x^2 = 9 | 4705196.$
45
20
18
25
18
79
72
108

3.57
3
10.71
76.1
65.4

76.1 | 65.486
507
210

9.2

Large

91.4 .8
92.2 .8
93.0
93.0
93.0 −5.7
98.7

8353.96
8500.84
8649.00
8649.00
9741.69

43894.490
43861.138
4 | 33.352

8.338 = σ²

ρ = 2.886174

2.887 × 100 = 288.7

3,0
936.6 | 288.70
28018
8520

95089.60

$\Sigma x^2 = 13312544.1$

$\sqrt{\frac{\Sigma x^2}{n}} = 11.2$

$= 5^{54}$

$= 11.2$

824 = mo
rakaf
14 | 1153.8
112
33
28
58
54

928.1
928.1
.9281
74248
18562
835129
8613691

685.5
468.3
14 | 1153.8 ΣX

95089.60

n = 9.28

5'23'14,77
4389449
9620926
− 95089.60
13 | 1119.166 | 86.12 = σ²
104
79
78
16
13
3.9

468.3
940
6 | 5623
93.7

914 | 987 | 1.08
914
7300
7312

Marcella Tari

2174 43.4 1900.96 4 1569 1569 1569 327
2177 38.3 1466.89 1569 1701 329
UCMC 38.0 1444.00 7845 9)3270(363 228900
2499 37.0 1369.00 1569 27 4540
4)156.9 6180.85 4)24617.61 57 9810
39.2 61544 61544 54 9)1069290
3)2641. 30 1184766
8.80 = a^2 a = 2.966
7.6
39.2)29666.
2744
2220

6180.55
5805.47
11986.32
11892.66
8)138.62(17.327
8
58
56
26
21
52
40

416
416
2496
416
1664
173056

4.13 4.135
4.13 17.2225 2075
4.13 1660
1239 11.4
413 343)4.161.
413 343
2652 531
70369 343
1480

2327 36.1 1303.21 170.1 2031
6454 38.8 128.164 1701 2031
2488 34.6 1197.16 1907 2031
2048 32.5 1056.25 1701 14497
2482 31.1 967.21 2593 41420
5786 428904
5)1701 580547 6)428904 170.1 580547
34.0 578680 71484 37.0 136990
4)18.67 6)2027.1 443557
4.667 = a^2 a = 2.16 34.5 71747
6.3 71484
34)216. 5)24.07
204 6.6 5.21
120 345)2282.
2070
2120

563,2
- 44,5
518,7

5167
5162
36169
31002
5167
25835

11)266978,89(24270,80
22
46
44
29
22
77

324
324
1296
648
972
104976

7,
469,)3247,
2283

3,3
33
99
99
1089

3,25
3,25
1625
650
975
10562,5

2653,15
- 2162,25
490,90

24375,93
24270,80
10)105,13(10,51

3316625
27173
3289452

3316625
3162,75
2)54347
27173

3,316
3,162
2)154
77

3,162
77
3289
3239
29151
9717
6478
9717
9491121

Large

249937.0 1369.00
217738.3 1466.89
455492 39.07 1321.00
21758 43.6 1900.26
4) 157.9 6257.15
39.5 6233.10
3) 2405
8.01 = n² n = 2.84

7.1
39x0) 284x0.
27.65
750

157.9
1579
14211
11053
7895
1579
4) 249324
623310

July 3, 1969
Taurus

Small

31.1 947.21
32.5 1056.25
34.6 1197.16
35.8 1281.64
36.1 1303.21
5) 1701 5805.47
34.0 5786.80
4) 18.67
4.67 = n², n = 2.158

6.3
34x0) 215x8.
2040
1180
1020
1600

2.158
2158
17264
10790
2158
4316
4656964

Tarzan Two 1969

31,1	967,21
32,8	1056,25
34,4	1197,16
35,8	1281,64
36,1	1303,21
37,0	1369,00
38,3	1466,89

7)24554 8641,36
35,0 -8603,02
6)38,34 (6391,67
21
17
15
2,52
1,2
small including 38,3 (including only 37 = 6,6V

1405/M = 35,0) 252,7
245 0
7 7 0

24554
24554
98216
122770
98216
49080
7)60221,16 (8603,02 ~~24554~~ 5071
56 3F3
42 245,2
42
221
16

7174,47
1466,89
8641,36

20

1594
1894
6376
14346
7970
15941
4)25408,36 (6352,09
24
14
12
20
20
8

122,4 5008,08
+ 37 + 1369,00
4)159,9 6377,08
39,8 - 6352,09
3)24,99
√8,33 = 2,886

1005/M 288,6/39,8
7,2 = V large including 37,0
39,8)288,6
2786
1000

including 38,3 but not 37 = 6,5V

Jump
1969
Tarsus
S,D
Manuella

$\frac{1005}{M} \quad \frac{228}{345} = V = 6.6$ Small

$V = 6.5$ Large

4585240.0? 1600
2177 38.3 1466.89
2499 37.0 1369
2178 43.6 1900.96
4)1589 6336.85
39.7 -6287.52
3)49.55
16.77 = σ²

S = 4.09
1.0.3 = value with 37.0
39)409.0
-392
1200

805.1
37.0
7)242.1
34.6

703045
1369
899.45
837320
4)2625
437

436
39
383
3)1209
402

43.6
38.8
383
1207

382
388
441
3)1211
403

39
34
851
117
1321

39.0 1521
38.8 1466.89
43.6 1900.96
3)1209 4888.85
403 -487200
2)1685
842 R2

S = 2.9
V = 2.9 × 100 / M

703)290000
-12821
790

1209
1209
10881
2418
1209601
3)1461837
37
259
111
1369

40
40
1600

1589
1589
14301
11712
7945
1589
4)2514921
628730

1587
1587
11109
10696
7935
1587
4)2498569
624642

Tarawa Manualla Revised #7, 28.65

Add 1964	35.0	1225.00
2082 or	31.1 x	967.21
2556 or	32.5 x	1056.25
2485 or	34.6 x	1197.16
6454	35.8 x	1281.64
2327	36.1 x	1303.21
	5) 170.1	5805.47
	M = 34.0	− 5786.80
		n−1 = 4) 18.67
		4.6675

$\frac{(\Sigma x)^2}{n}$ $170.1^2 = \frac{28934.01}{5} = 5786.80$

$s^2 = 4.6675$ $\frac{100s}{m} = \frac{21.588}{34} =$ 205.1 / 170.1 / 340

$s = 2.1588$

$\frac{6.3}{34}$ = variance

34) 21588 — 204 — 118 — 0

341) 1973 — 1705 — 2680 — 2387 — 803 — 5.7

Total with 1964 add 6) 205.1 = 34.1

Ba only 34.5

2499	37.5 37.0	1406.25
2177	38.3	1466.89
2178	43.6	1900.46
	3) 119.4	4774.10
	M = 39.8	− 4752.12
		n−1 = 2) 21.98
		10.99

7030.45 − 7011.08 = 19.45 (3.89 = s^2 − 5 = 1.972

$\frac{\Sigma x^2}{n}$ $119.4^2 = \frac{14256.36}{3} = 4752.12$

$s^2 = 10.99$ $\frac{100s}{m} = \frac{331.5}{398}$ = ✓ large

$s = 3.315$

398) 331.5 — 3184 — 1310 — 1194 — 1160

4.5852 / 40.6 est

add from large

170.1 — 37.0 — 6) 207.1 — 34.5

5805.47 — 1369.00 — 7174.47 — 7148.40 — 26.07 (5.21

n−1 = 5) 26.07 — 25 — 10 — 7

$\frac{100s}{m} = \frac{448}{40.4} = v$

6) 2281 — 2070 — 210

4774.10 − 1406.25 = 3367.85 − 3343.80 = 24.05 = s

345 — 345 — 38 — 259 — 111 — 1369

$\frac{1.19.4}{3} \times 207.1^2 = \frac{4289041}{6} = 698173$

n = 6

6.21 345) 6.210

1.19.4 − 37.5 — 2) 81.9 — M 40.4

225 — 225 — 1225 — 450 — 440 — 49625

621 — 621 — 1242 — 3726 — 3856.41

229 — 229 — 2061 — 458 — 458 — 52.441

228 — 228 — 1824 — 456 — 456 — 51.984

207.1 — 207.1 — 14497 — 4142 — 428904.1

4.48 — 4.48 — 3584 — 1792 — 1792 — 20.0704

819 — 819 — 7371 — 819 — 6552 — 2670.61 (335380

23 — 23 — 69 — 46 — 9

40.4) 448.0 — 404 — 440

1.1 — 4.5 — 45 — 225 — 180 — 20.2

6) 42890.41

29 — 24 — 50 — 44 — 24

329.5
329.5
16475
29655
6590
9885
108557025 (12063.36
9
18
18
57
54
30
27
32
27
55

39 383 38.4 38.5
39 383 38.4 38.5
351 1149 1536 1925
117 3064 3072 3080
1521149 1152 1155
14,6609 14,7456 14,8225

~~3829~~
~~3829~~

3851 3857
3851 3857
3851 24999
19255 19285
30808 30856
11553 11571
14,830201 14,876449

3858 3859
3858 3859
30864 34731
19240 19295
30864 30872
11574 11577
14.883664 14.89(1.881)

14890000
883664
4336

Tasomelatarus mawala 7.21.65 S.D.

31.1	M 34.0	967.21
32.5	170.1	1056.25
34.6	A	1197.16
35.8		1281.64
36.1		1303.21
37.1	M 39.8	1369.00
37.0	119.4	
38.3	B	1466.89
43.6		1900.96

5805.47

8) 289.0 — 36.1

$(\Sigma X)^2 = 83521.00$; $n = 8$

10542.32 / 1440.12 / 7) 102.20 — $14.6 = s^2$; $s = 3.820$

$\frac{(\Sigma X)^2}{n}$ 6022.16 = 8603.02 ; $n = 7$

589.0 − 43.6 = 7) 245.4 (35.0

21 / 35

10542.32 − 1900.96 = 8641.36 − 8603.02 = 6) 38.34 (6.39 = s^2

36 / 23 / 18 / 54 ; $n-1$; $s = 2.5278$

$\frac{100S}{M} = \frac{252.78}{35}$

14 / 311) 436 / 311 / 1250 / 1244

$\frac{100S}{M} = \frac{382.0}{36.1} = 10.6 = \sqrt{}$ (Time saver)

106 = √ ; 361) 382.01 / 361 / 2100

B 119.4² = 3) 14256.36 / 4752.12

4774.10 − 4752.12 = 21.98 ; 2) 21.98 / 10.99 = s^2 ; $s = \sqrt{10.99} = 33.1$

331 / 710

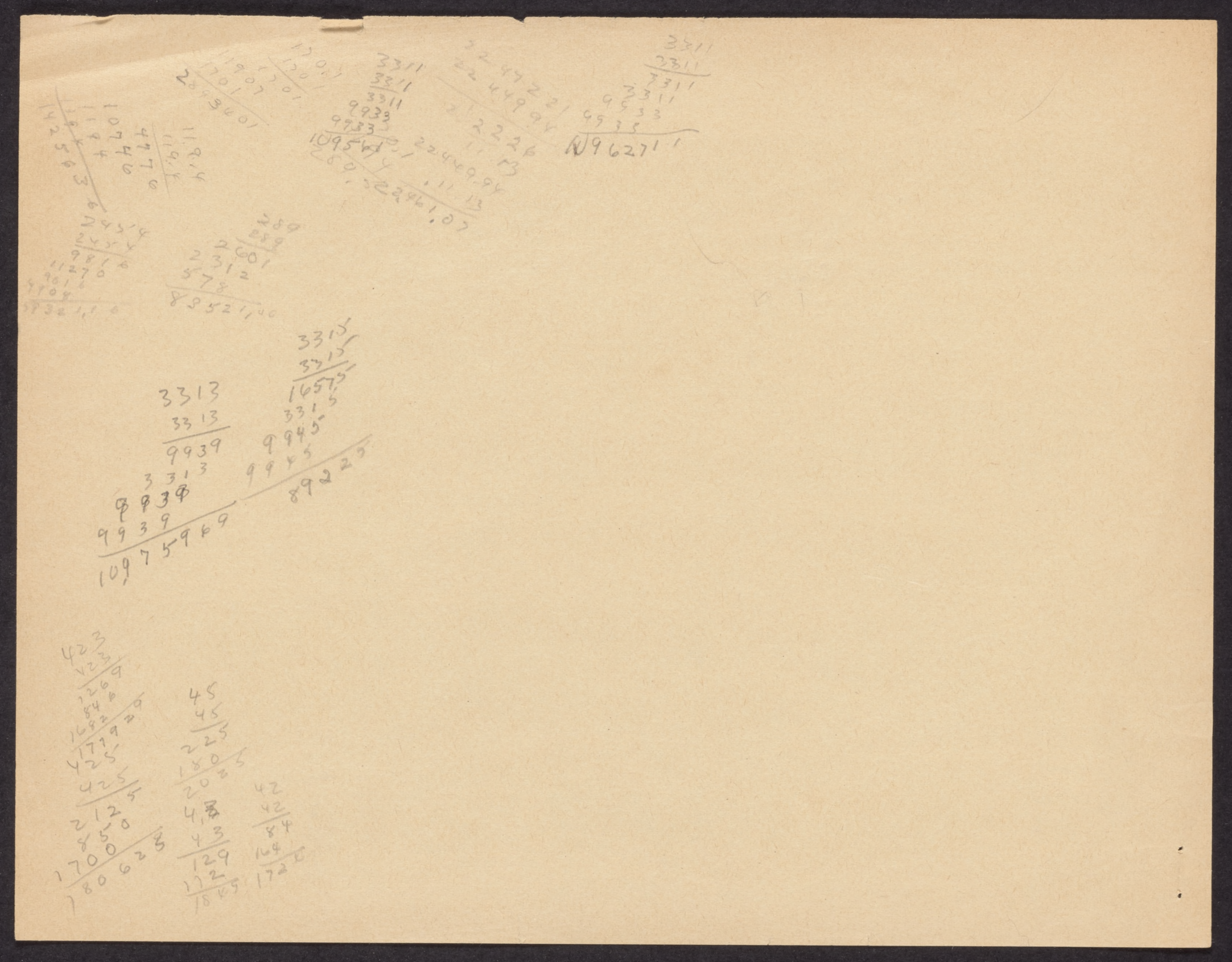
2890 / 405 / 9) 3295 (36.6 / 27 / 59 / 54 / 55

A 170.1 ; 5) 18934.01 / 3786.80 ; 5806.47 / 3786.80 / 2018.67 / 504.66 = s^2

$s = 22.462$; $\frac{100S}{M} = \frac{224.62}{34}$; 34) 224.62 / 204 / 206 / 31

7.2 / 35.0) 252.78 / 2450 / 778 / 700

383 max / 311 min ; 123 ; 311) 383 / 311 / 720 / 622 / 980



7,20,16X

359

Jasmitalarus mausalla

see 1965 review

n=8

31.1	31	31	961
32.5	32	33	1089
34.6	34	35	1225
35.8	35	72 (2)	2592
36.1	36	37	1369
37.0	37	38	1444
38.3	38	43	1849
43.6	43	289	10529

1.3, 2.1, 1.2, .3, .9, 1.3, 5.3

1969

819

289

8) 289.0

M = 36.1

289² = 83521

10440

10529 − 10440 = 89/7 = 12.7 = n²

Δ = 3,5b

V = 356/36.1 = 9.86

3293

140% = max/min

289.0 − 43.6 = 245.4

7) 245.4

35.06

$\frac{\Sigma x^2}{n}$ = 860.02

10529 − 1849 = 8680

8607

7) 7.3 (1.3

s = 1.140175

123

31,1) 383

311

720

623

980

14

311) 43.6

311

1250

1244

3.2

35) 114.0

105

90

1

345) 4230

1969 small

2890 − 819 = 2071

6) 2071

34.5

10529 − 3293 = 7236.0

7148.40

5) 8460

19.72 = 2² = n = 4.23

37

37

259

111

1369

5421

2421

2421

4842

9684

48 42

7) 58561 2x1 839320

207 1

207 1

14497

4142

4) 42890.41 714840

M. Dijeux Taure

43,4 1900,96

38,3 1466,84

408 1640,25

3) 12248 6008 10

408 4993,42

2) 44,18

7,09 = 22

h = 2,662

408 | 266,21

2448

2140

43,7

37,7

38,3

3) 11,97

39,9

6,5

408 | 266,21

2448

2140

San Fulcran

Thias M. Dijeux

6889,00

8830

6528,67

8667,61

8464,00

8630,41

8390,56

9702,25

6) 5[illegible]

91,8

5074383

50618,53

5) 125,30

25,06

5,4 = V

918 | 5040,0

4590

4100

5511,1

50,8

7) 363,9

90,2 M

2345 77,5

2349 76,8

2328 76,5

2620 73,0

2428 72,8

7 | 524,7

74,9

6006,25

5898,24

5852,25

5550,25

5461,21

5329,00

5256,25

39353,45

3933 0001

6) 23,41

3,90

1224

1224

4896

2448

2448

1224

3) 14981,76

4993,92

525

525

525

Cadiz

Caracoid

47.5 2256.25

45.0 2025.00

43.5 189225

3)136 617,3,50

45.3 6145,30

2)8.2 0

4,1 = z^2

$z = 2$ 4.4

45,3) 200x0.

1812

1980

61653

3)184960

Hamm

80.0 20.1

72.3 18.6

72.2 17.9

17.2

17.2

17.8

17.9

17.0

6400.00 6400,00 80

5227,29 5227,29 72.3

5212.84 5212.84 72.2

4761.00 66.0

4761,00 66.0

5126,56 71.6

5212.84 72.2

4692.25 68.5

41393 88) 5748 (71.8

41174.38 56

7) 219,40 68

31,34 = z^2

z = 5,6 7) 5600

5026

3657

3657

25599

18285

22042

109711

72.7 75) 133836.49

223673

80.0 20.1

68.5 17.0

72.7 18.0

68.0 17.0

72.3

72.2

8) 5769 72.1

56

16

7290

8) 4548

569.0

569.0

574.8

574.8

459.84

22992

40236

28790

8) 33039504

4117438

731) 347,0'

292 4

4460

2920

24767

5) 13383649

10

33

30

38

35

33

30

24

365

640000 800

5227.29 72.3

5212.84 72.2

4692.25 68.5

5285.29 72.7

24817.67 5) 3657

24767.30 73.1

4) 50.37

1234

San diego

Tulsa aug 22 1964

72.5 5256.25
73.0 5329.00
73.9 5461.21
74.5 5550.25
74.8 5592.25
74.8 5598.24
77.5 6006.25

80.8 6528.64
83.0 6889.00
91.6 8390.56
92.8 8464.00
92.9 8630.41
93.1 8647.61
98.5 9702.25

1156.6
1156.6
69396
69396
57830
11566
11566
1337723.56

13) 1074.24 (82.63
104
34
26
82
78
44

6319
sabroda 863
87182
89.11.
82.6 7909.0
826
830

7) 6319
902.7

572724.7
570425.1
6) 2299.6 (383.2
18
49
48
19
18
16

6.21.65.90
mat fmin

6.19 = 2
6.18
92) 618.0 = large
552 includes
680 80.8
552
128
46

95551.68
819
528
9.09
9.09
81.81
81.81
8262.81

6.4
897) 5780
5382
3880
3588

80.8
830
86.3
91.6
92.0
92.9
93.1
95.5
718.2

718.2
14364
57456
7182
50274
515812
48
35
32
32
61
464
540
432.00
32

631.9
631.9
56871
6319
18957
37914
7) 3992976 (570425.1
35
49
49
28
28
0

57
57
399
285
342
57
57
5211
4053
2895
3992975
3352

619
619
571
571
34 3314
33 3834
1

Tulsa aug 22 1964

S.D. Jairus Lake

437 1909.69
40.5 164025
383 146689
37.5 1406.25
4)1600 642308 64
40.0 640000 4)256.00
3)2308 24
7.69 16

6.8
400)2773.085
2400
3730
3200

330.4
3304 39
13216 39
9912 351
9912 117
9)109165.16 15.21
9
19
18
11
9
26
18
85
81
41
36
36

3.89
389
3501
3112
1167
1513.21

398
398
3184
3582
1194
158404

L 4 160.0
S 5 170.4
9)3304
367

642308
5832.8
1225594
1212944
8)12648
15.81

10.8
367)3980.01
367
3100
2936

S. D. Tarus Aug 22, 1909

2682 31.1
2544 32.6
2488 34.8
6454 35.8
2327 36.1
2499 37.7
2177 38.3
2178 43.7

34.0
5)17.04

3)1197
39.9

967.21
1062.76
1218.04
1281.64
1303.21

142129
1466.89
1909.69

883286

7)2464
M 35.2

4799.87
477603
2)2184
109.2

246.4
2464
9856
14784
9856
49280
7)607129 (86732
56
47
42
51
49
22
21
19
14
56

2,821347 = 2
8.
352)2821.547
2464
357

1197
1197
8379
10773
1197
1197
1197
14328.09 (477603
3)
12
23
21
22
21
18
18
0

A = 3.3
8.2
399,830.0.
3192
1080

38.0 1444.00
383 1466 89
437 1909.69
3)1200 482058
40.0 480000
2)2058
1029 = 2

A = 3.2 81
40)320.0

48000
3)144000
12
24

32
32
44
44
10.2

Great Circle Harness

Left N=151 X		X²	XZ
96	96	9216	9216
98 x 3	294	9604	28812
99 x 2	198	9801	19602
100 x 8	800	10000	80000
101 x 6	606	10201	61,206
102 x 16	1632	10404	166,464
103 x 16	1648	10609	169,744
104 x 19	1976	10816	205,504
105 x 15	1575	11025	165,375
106 x 16	1696	11236	179,776
107 x 16	1712	11449	183,184
108 x 8	864	11664	93,312
109 x 7	763	11881	83,167
110 x 16	1760	12100	193,600
111 x 1	111	12321	12321
112 x 1	112	12544	12544
	151) 15843		1,663,827

M = 104.92

Right N=149	X	X²	
99 x 3	297	9801	29,403
100 x 6	600	10000	60000
101 x 7	707	10201	71407
102 x 9	918	10404	93636
103 x 16	1648	10609	169,744
104 x 14	1456	10816	151,424
105 x 19	1995	11025	209,475
106 x 19	2014	11236	213484
107 x 17	1819	11449	194,633
108 x 16	1728	11664	186,624
109 x 10	1090	11881	118,810
110 x 8	880	12100	96,800
111 x 3	333	12321	36963
112 x 1	112	12544	12544
114 x 1	114	12996	12996
	149) 15711		16579443

M = 105.44

$$s^2 = \frac{1663827 - \frac{(15843)^2}{151}}{151-1} = \frac{1572}{150} = 10.48$$

$$s = \sqrt{10.48} = 3.249 \quad \text{standard dev}$$

$$V = \frac{3.2 \times 100}{104.92} = \frac{324}{104.92} = 3.1 \text{ Left}$$

$$s^2 = \frac{1657943 - \frac{(15711)^2}{149}}{149-1} \quad \frac{1468355}{149} = 1656614.2 = \frac{1328.8}{148}$$

$$s^2 = \sqrt{8.97+} = 2.99+$$

$$V = \frac{2.99 \times 100}{105.44} = \frac{299}{105.44} = 2.9 \text{ Right}$$

min. 96 } max is 114 9.9
max 114 } min

Great Circle Harness

7.22.64

Great Auk femora

	x	x^2
64	64	4096
67	67	4489
68	748	50864
69	345	23805
70	1610	112700
71	2343	166353
72	1584	114048
73	1752	127896
74	2294	169756
75	1575	118125
76	988	75088
77	308	23716
78	468	36504
79	316	24964
199	14462	1052404

1393
532
398
1340

$M = 72.6$

1052404
1051002

199) 1402. (7.0 = x^2
1386
160

$x = 2.6457$

$V = \frac{2\,64.57}{72.6} = 3.6$

1290 = mm/min

73 × 2 = 292 + 146 = 1752

68 × 68 = 748

23 × 70 = 1610

71 × 33 = 213 + 213 = 2345 → 1584

72 × 22 = 144 + 144

74 × 31 = 74 + 222 = 2294

75 × 21 = 75 + 1500 = 1575

76 × 13 = 228 + 76 = 988

46 × 46 = 4624 + 4624 = 5086

5184 × 22 = 10368 + 10368 = 114048

23 × 4900 = 20700 + 92 = 112700

5184 × 22 = 10368 + 103680 = 114048

5041 × 33 = 15123 + 151230 = 166353

5474 × 31 = 5474 + 164220 = 169756

5329 × 24 = 21316 + 106580 = 127896

5776 × 13 = 17328 + 57760 = 75088

5625 × 21 = 5625 + 112500 = 118125

105 1002

3.6
726) 2648.0
2178
4.677

14462 × 14462 = 28924 + 867720 + 5784800 + 57848000 + 144620000 = 209149444 (105

199) 209149444 (1051
199
1014
995
1994
1991
0444
398
46

60.12
8.69
68.81

60.12
− 8.49
51.63

69.43
9.35
50.08

68
3
71

7, 22, 64

1179 = may / min.

Quat Cuk Tibo Jaus

122	(11)	1342	14884
123	(1)	123	15129
124	(3)	372	46128
125	(7)	875	109375
126	(7)	882	111132
127	(10)	1270	161290
128	(9)	1152	147456
129	(8)	1032	133128
130	25	3250	422500
131	27	3537	463347
132	13	1716	225512
133	14	2128	283024
134	11	1474	197516
135	13	1755	236925
136	12	1632	221952
137	9	1233	168921
138	9	1242	171396
139	6	834	115926
140	5	560	78400
141	4	564	79524
142	2	284	40328
143	2	286	40898

199) 26323

N=199

M=133,28

348191,2

199) 69290032 9

597

959

796

1630

1592

380

199

1813

1791

22

199

239

199

400

348 10 10 8 10 91

-348 1911

2680

13,53 = d²

198) 2680

198

700

594

1060

990

700

S=3,68

V= 368 / 133,28

132 / 13 / 396 / 132 / 1716

131 / 27 / 917 / 262 / 3537

130 / 25 / 650 / 260 / 3250

136 / 12 / 272 / 136 / 1632

135 / 13 / 405 / 135 / 1755

134 / 13 / 1742

133 / 16 / 798 / 133 / 2128

16900 / 25 / 84500 / 33800 / 422500

1032 / 8 / 8256 / 16441 / 8 / 133128

16384 / 9 / 147456

18149 / 9 / 163341

17424 / 13 / 51272 / 17424 / 225312

12161 / 27 / 120127 / 34322 / 463347

19044 / 9 / 171396

17956 / 17956 / 197516

17689 / 16 / 106134 / 17689 / 283024

18496 / 12 / 36992 / 18496 / 221952

18225 / 13 / 54675 / 18225 / 236925

133,28

199) 56523 / 199 / 662 / 597 / 653 / 597 / 560 / 398 / 1626

26523 / 26523 / 79569 / 53046 / 1326159 / 53046 / 703469-29

= V=2,6

133,28) 368,06 / 34556 / 2440

26323 / 26323 / 78969 / 52646 / 78969 / 157938 / 52646 / 0

69290032

7.242 64

Pinguinalla

	coef. var.	% $\frac{max}{min}$	N	Great auk coef. var.	% $\frac{max}{min}$	N
Coracoid	12.4	150%	20			
Scapula	9.7	124%	11			
Humerus	9.91	151%	30	3.0	114%	200
" (dessin leyth)	10.3	147%	36			
Ulna	11.71	133%	19			
Radius	10.8	131%	7			
Carpus	6.9 ? (8.1?)	125%	10			
Femur	9.56	125%	6	3.4	123 %	199
Tibia	11.2	138%	14	2.0	117 %	199
Tarsus	9.84	140%	8			

Recent V. adolg calif.

Humerus $V = 3.6$

$\frac{max}{min} = 110\%$ $\frac{83.2}{91.5}$ mm.

$n = 7$

Tarsus $V = 2.8$

Tibia $V = 3.8$

Swinton

p. 102

re fossils: "When ... fossils from ... horizons ... are said not to ... present ... are under the ... They are a homogeneous taxonomic group or really ref. 2 or more groups ... hence population" etc see also p. 172

14884
15129
46128
109375
111032
161290
147456
133128
422500
463347
225512
283024
197516
236925
221952
168921
171396
115924
78400
79524
40328
40898

3484591

7,20.6K

See 1965

Maxcala Scapula (sp. Gr.)

n = 11

10.2
10.3
10.3
10.5
10.7
10.8

10.4+
62.8

104,04
106,09
106,09
110,25
114,49
116,64

759.19

11,3
11,8
12,1
13,1
13,2

12,3

124,3

1404,59

1416,79

1404,59

12,20 / 10 = 1,22 = σ²

1,108 = R

99 = V

11,3) 110,8
113
910

n = 11

V = 110 / 11,3 = 9,7

12,90 = max / min

small ΣX² = 3943,84 ÷ 6 = 657,3

(ΣX)² − ΣX²/n = 657,6 − 657,3 = ,3

V = 2,3?

large 759.19
− 756,41
2,78

(N−1) → 24) 2,78 (,695 = σ²

24
38
36
20

S = ,8336 × 100 = 83,36 ÷ 12,3

6,77 V Large

12,3) 83,36
738
956
861
950

,06
5) 0,30

,3 ÷ 5 = ,06 = σ²

σ = √,06 = ,245

100S = 24,49 ÷ 10,4

10,4) 244,9 × 9,0
208
369
312

Cut bread to proportion

Curacaví Maricalla

n = 20

37,3	37 (1)	1369	1394,3
38,5	38 (1)	1444	1482,2
39,4	39 (1)	1521	1568,1
39,9			1592,0
40,0	120 (3)	4800	1600,0
40,5			1640,2
40,7			1656,5
40,8	20,5 (5)	8405	1664,6
41,2			1697,4
41,4			1714,0
41,5			1722,2
44,8	45 (1)	2025	1772,85
48,6			2007,3
48,7	147 (3)	7203	1973,55
49,0			2007,04
49,7			2361,96
50,0	150 (3)	7500	2371,69
50,2			2401,00
51,7	51 (1)	2601	2470,09
56,07	56 (1)	3136	2500,00
			2520,04
			2472,89
			3136,00
			22440,74
			22370,18

$\bar{x} = 39427 / 578 = 68,2$

$s^2 = 30,4$

$s = \sqrt{30,4} = 5,5$ pts.

$V = \frac{5,5 \times 100}{44,4} = 12,4$

$M = 44,4$

$(888)^2 = 788544$

$788544 / 20 = 39427$

$\frac{9}{n-1} \rightarrow 8)\ 70,56\ (8,82 = s^2$

$s = 2,969848$

$5,96 = \sqrt{}$

$49,8)\ 296,98$

$\frac{2490}{4798}$

$\frac{4482}{3160}$

$\frac{2988}{172}$

$22440,74 - 2007,04 = 20433,70$

$20391,9$

$7)\ 41,86\ (5,97 = s^2$

$s = 2,443358$

$\frac{100\,s}{\bar{x}} = \frac{244,3}{50,48}$

$\frac{56}{\text{max}} / \text{mm} = 44,8 = 125,90$

$\frac{56}{\text{max}} / \text{mm} = 48,6 = 115$

$\frac{40,1}{9)204}$

$\frac{44,1}{9)448,7}$

$\frac{49,8}{9)448,7}$

$\frac{40,1}{9)404,5}$

$\frac{44,8}{9)403,2}$

$\frac{49,8}{9)448,7}$

$\frac{50,1}{9)450,9}$

$\frac{56,07}{9)504,63}$

$\frac{88}{81}$

$\frac{77}{44}$

$\frac{11}{33}$

$\frac{27}{63}$

$\frac{18}{18}$

$\frac{36}{36}$

$\frac{36}{36}$

$\frac{63}{63}$

$\frac{63}{63}$

$\frac{63}{63

Tranicella brevis

5.1.65

gr. length	length to detach	br. prox	gr. length	length to detach	br prox
lat cochlepi process					
11.4 - 56.4	39.5	14.2, 14.1 14.5 (4)			(16.3
63.8	44.1	14.2	8 0	0	(16.6
		14.4			(16.8
		14.5	16.5		(16.8
61.0		14.6 14.6 (13)	17.2		(16.4
	42.3	14.6	16.6 - 17.0 -		17.0
		14.6		(2)	17.1
	40.2	14.7	17.1 - 17.5 -		17.2
12.5 - 56.2 63.8?	44.1?	14.7			17.31
	43.2	14.8	0		17.5
62.6	38.7	14.8	17.6 - 18.0		(17.6
58.1		14.9 38.7 - 44.3	20 (2)		(17.7
	41.8	15.0			17.8
62.0	44.3	15.0			17.9
61.8?	42.4	15.0	30	18.1 - 18.5 (6)	(18.0
	42.4	15.0			(18.1
		15.0	16.4 - 6.9 72.2 x	47.6	18.2
		15.1 15.1-15.5	73.5 x	48.7	18.2
13.2 - 60 65.1	41.3	15.1 (3)	16.8 - 7.0 78.7 x	52.0	18.2
61.3		15.1 41.3 - 44.3			18.3
63.4	43.3	15.2	15.8 6.0 70.9 x	48.7	18.4
63.2	44.7	15.2			18.5
62.8	41.6	15.2	80.4? x	54.8	18.6
		15.3	17.3 - 6.5 74.6 x	49.7	18.7
		15.3	0		
62.7	42.1	15.4		53.7	18.9
63.2	43.7	15.4	18.6 - 19.0 - (3)		(19.0
13.3.62 63.7	42.0	15.5	30		19.1
63.1	43.4	15.5	19.1 - 19.5 - (1)		19.2
66.1	44.3	15.5			19.3
66.5	45.3	15.6 15.6-16.0	19.6 - 20 (1)		19.5
		15.6	60		19.6
		15.6 10	20.1 - 20.5 (1)		19.7
	43.3	15.7 43.3 - 45.3			19.8
63.6	43.7	15.7			19.9
13.7 - 6.1 65.0		15.7			20
		15.7	20		(20.1
		15.7	19.8 - 8.0 ~~65.2~~ x	52.0	(20.2
		15.8			20.3
		15.8	Type	53.2	19.5
		15.9			
		16.1 16.1-16.5	0	+	
		16.1 (7)	6.0 13.8 66.6	44.0	
		16.2 45.3	5.3 13.0 58.7	41.0	
		16.2	76.7 ?? x	54.2	
		16.3	5.5 13.2 61.2	42.2	
		16.3	5.2 14.2 61.3	40.8	
	45.3	16.4	7.9 16.3		
			7.1 16.8		
			6.0 13.8		
			4.9 15.5		

7, 20, 64

Manualla Ulua

n=19

	24,2	24	24 (1)	576	
3	24,6	25	75 (3)	1975	
	24,8				
	25,2				
4	25,5	26	104 (4)	2704	
	25,7				
	25,9				
	26,3				
5	26,5	27	135 (5)	3645	
	26,5				
	26,6				
	26,9				
	27,4				
2	27,8	28	28 (1)	784	
2	28,5	29	58 (2)	1682	
	28,7				
1	29,9	30	60 (2)	1800	
1	30,1				
3	33,1	33	33 (1)	1089	
			(517)	14245	

142 55
- 140 67
188 ÷ 19-1 = 18 = 10,04 = σ^2

s = 3,162

$V = \frac{316,20}{27} = 11,71$

11,71
27) 316,20
27
46
27
192
189
30

1339 0 mar / min

267289 → 26,7289
140 67
19) 267289
19
77
76
128
114
149

27 = M
19) 517
38
137
133
4

7.20.64

Carpinus caroliniana Mancalla

1964

n=10

29.4	29	30	900
30.7	30	31	961
31.7	31	32	1024
32.7	32	33 (2)	2178
33.0	33	66	
35.0	35	35 (2)	2450
35.3	70	70	
35.6	36	36 (2)	2592
36.0	72	72	
37.1	37	37 (1)	1369
336.7	334	338	11474

M 33.6 M 33.4 M 33.8

11474
11424
50

50/9 = 5.55 = s2

A = 2.35

V = 235/338 = 6.9

29-30 2
31 32 2
33 34 1
35 36 4
37. 1

28-29 1
30 31 2
32-33 2
34-35 3
36-37 2

29.5-9 — 1
30 - 4 — 0
30.5-9 — 1
31 - 4 — 0
31.5-9 — 1
32 - 4 — 0
32.5-9 — 1
33 - 4 — 1
33.5-9 — 0
34 - 4 — 0
34.5-9 — 0
35 - 4 — 2
35.5-9 — 1
36 - 4 — 1
36.5-9 — 0
37 - 4 — 1

29.4
4.7
34.1
39.8

12

12590 = max/min

10) 114244 = 11424.4

33.8) 235.01 (6.9
2028
322

V = 2.265
6.7
33.7) 226.5

X	fX	fX²
29.6	30 876.16	900
30.7	942.49	961
31.7	1004.89	1024
32.7	1069.29	1089.00
33.0	66 2	2178
159	Σfx	5063 = Σfx²

5063
- 5056
7

(25281 ÷ 5 = 5056
24869 ÷ 5 = 4973.85

4981.83
4973.85
8.00 ÷ 4 = 2.0 = s²

A = 1.4142 x 100
141.4 / 31.5 = 4.48

31.5) 14.1 x 4.
126 0
1540
1260
280
35

35.0
35.3
35.6
36.0
37.1
336.7

105
353
36
37
387

1225
1240
1267
1296
1296
1369
6417

3675

11403.0
11356.9
9) 46.1 (5.12
45
1
9
20

6417
- 6408
9 ÷ 4 = 2.2 = s²
1.48 = s

35.8) 148.0 (4.1
143.2
480

Large max 37.1 min 35.0 V 4.1
mean 35.8

Small Max 33.0 min 29.6 mean 31.5
V = 4.48
max/min large 10670
" " small 11170

5) 179.2 (35.8
178

5) 32041
6408

7.25.64

Tibia Maxcalla. fr intervals

n=14

71.5
72.8
73.4
74.4
76.3
76.7
77.2
80.8
82.2
91.4
92.2
93.0
93.0
98.7

71-72 2
73-74 2
75-76 1
77-78 1
79-80 1
81-82 1
83-84 0
85-86 0
87-88 0
89-90 0
91-92 1
93-94 2
95-96 0
97-98 1

71 - 73 = 3
74 - 76 3
77 - 79 1
80 82 2
83 - 85 0
86 - 88 0
89 - 91 1
92 - 94 3
95 - 97 0
98 - 1

5)46.83
93.6

n=41

tibia

br. distal

6.8
6.8
6.9
6.9
7.1
7.1
7.3
7.3
7.3
7.4
7.4
7.5
7.6
7.6
7.6
7.8
7.9
8.3
8.3
8.3
8.4
8.5
8.6
8.7
8.7
8.9
9.0
9.1
9.1
9.2
9.4
9.4
9.6
9.6
9.8
10.0
10.0
10.4
10.6
11.1

6.8-6.9 4
7.0-7.1 2
7.2-7.3 4
7.4-7.5 3
7.6-7.7 3
7.8-7.9 2
8.0-8.1 0
8.2-8.3 3
8.4 8.5 2
8.6 8.7 3
8.8-8.9 1
9.0-9.1 3
9.2-9.3 1
9.4-9.5 2
9.6-9.7 2
9.8-9.9 1
10-10.1 2
10.2-10.3 0
10.4-10.5 1
10.6-10.7 1
10.8-10.9 0
11-11.1 1

6.5-6.9 - 4
7.0-7.4 - 8
7.5-7.9 - 6
8.0-8.4 - 4
8.5-8.9 - 5
9.0-9.4 - 4
9.5-9.9 3
10-10.4 3
10.5-10.9 1
11-11.4 1

>, 20, 64

Tibiotarsus maucalla

n=14

71,5	71	72	5184
72,8	72	146 (2)	10658
73,4	73	75	5625
74,6	74	76	5776
76,3	152	154 (2)	11858
76,7	76,2		
77,2	77	81	6561
80,8	80	82	6724
82,2	82		
91,4	91	91	8281
92,2	92	92	8464
93,0	186	186 (2)	17298
93,0	93 x 2		
98,7	98	99	9801
	1148 (82,0	1854 (82,4	96237

14) 1153,8 (82,4
112
33
28
58
56
2

5) 4081
45
8
37
35
2

467 large
218089 ($= nQ^2$)
96227
− 95122
1105 / 13 = 85 = r^2

$r = 9,21954$

$V = \frac{921,95}{82,4} = 11,2$

Large max 98,7 min 91,4 mean 95,1, V = 6,0
Small max 82,2 " 71,5 " 76,1 V = 4,1

Tibia.

11554
11554
4616
5770
1154
11554

14) 133171 6 (95122
126
71
70
17
14
31
28
36
28
8

Small
52366 ΣX^2
52288 $(\Sigma X)^2$
78 N
78 ÷ 8 $(C=n-1)$
9,75 $= r^2$
3,12 $= r$

5) 21089
20
818,
15
30
28
8 rem 7,1665

Wing

438444
438417
127,4 $= 3117 = r^2$
5,63 $= r$

11,18
82x4,) 921,95
824
979
824
1555
824
7310

138 90 = mar / min

6,0
936,563,0,
561 0
20,0
4,1
761,) 312,0,
304 4
760

7,2464

Mamalla Tatvmahatabus S. D.

31,1	30-31 — 1	31-32 — 2
32,5	32-33 — 1	33-34 — 1
34,4	34-35 — 2	35-36 — 2
35,8	36-37 — 2	37-38 2
36,1	38-39, 1	39-40 — 1
37,0	40-41 1	41-42 0
38,3	42-43 1	43 1
40,5		
43,6		

62.7
5.34
68.04

2.67
2
5.34

62.70
- 5.34
67.36

76.3%

Statistical studies
Manuala
Wier
Penguins

82.4	82	6724
83.5	84	7056
85.4	85	7225
85.8	86	7396
88.8	89	7921
89.5	90	8100
91.1	91	8281
7)606.5	607	52703.00
86.64		52635.57

52635.57

7) 36844 9

35
18
14
44
42
24
21
39,
35
40

6) 47.43

6
7
6
14
12
23
18
50

(11,238 = 0²

= 3.35

3.8 = r

8664) 33500
25992
75080

110% max / min.

carpometa ext length

~~46.1~~	46.7
~~38~~	43.3
~~3~~	45.6
	44.7
	433
	440

4) 2676

44.6

14 26 44.26
70 91 20
26 77 17

7.22.64

Recent Unio a. calif. Carnus, 11070 tuba

10970 max/min, Carnus

n=7

36.9	37	37	1369
37.5	38	38	1444
38.8			
39.0	39^3	117^3	4563
39.1			
39.6	40^2	80^2	3200
40.5			
			10576
			10569
			7

7) 271.4 (38.7
21
61
56
5
7) 272
38.8
6) 7.0 (1.16
6
10
6
40
7) 73984

1.08
38.8

2.8 = ✓

38.8) 107.5

38.8) 108.01
776
304

1.06	1.07	108	
1.06	1.07	108	
436	749	864	
106	107	108	
1.06			
1.123614496			

1, 22.64

Recent Urea analyses calf, Humeur n=7

88,2 83 83 6889

86.3

86.4 86 (2) 172 14792

86.7

89.4 87 87 7569

90.8 89 89 7921

91,5 91 91 8281

92 92 8464

92

7) 614,3 (87,7 7) 614 (87,7 539164,00

56 56 538556,57

54 59 1450 6) 59,43 + 9,90 = s2

43 54

54

$s = \sqrt{9,9} = 3,16$

$\frac{316}{87,7} = 3,6 = \checkmark$

$1109 = \frac{mg}{mm}$

7) 3769961 ≤ 538554,5

35

26

21

59

56

39

35

46

42

40

538554,57

7) 376996

35

26

21

59

56

39

35

46

42

40

35

50

3,6

87x7,) 316,01

2631

5290

5262

Urea a. calc. uric

Urea to cotylaridy 1

- 62,3
- 63,3
- 63,9
- 64,1
- 65,7
- 67,6
- 68,2

7) 455 3 1

65,0

Ratios leg + wing bones Alcidae

	femur to humerus	tarsus to femur	carpus to humerus during symphysis	length diff to symph carpus to femur	short leg to tarsus to femur	carpus at symph prox to length	carp ext to length at symph	tarsus brsh to length	tars br sh to beg of fossa	tarsus br to depth sh
Cepphus										
1173	58.3 %	93 %	51.0	87.5'	65.5'	26.8	22.0	7.3	10.4	93.0
1174	58.3	89.5'	50.4	86.7	61.7	27.8	22.4	6.9	10.0	92.6
1172	61.5	89.4	51.3	83.5'	59.4	27.5'	22.7	7.4	11.2	100
Uria aalge										
674	55.2	80.5'	44.7	81.2	53.3	26.4	21.2	8.6	13.0	109
697	54.7	82.2	43.7	81.0	52.5'	27.3	23.0	9.2	14.5'	120
494	55.0	78.0	43.5'	79.0	50.0	27.9	23.5'	9.7	15.2	122
507	55.9	78.4	44.5'	79.5'	49.1	27.0	22.6	9.2'	14.7	128
485'	53.5'	77.3	44.3	80.3	48.2	26.9	22.7	9.5'	14.9	109
480	54.0	80.0	46.0	81.7	49.4	28.8	23.0	10.4	16.7	130
477	56.4	81.5'	—	—	52.1	—	—	9.3	14.6	112
Fratercula										
696	55.4	69.6	45.6	74.6	39.8	27.7	22.1	13.4	23.6	136
Aethia										
661	61.6	68.4	47.4	77.0	38.8	27.1	21.4	12.5	22.8	135'
						29.7	23.7	13.4	23.2	136.5'
Plautus	74.0	70.6	39.7	53.5	40.5'	—	29.6	13.7	23.9	136
Miller Plautus	71.5	—	—		36.8?	—	—	13.5	24.2	130
Ptychoramphus	83.1		53.3 missing left humerus			34.5	29.4	15	18.6	130 138
Aethia cristatella				53.5'	46.5?					

gr. length

56 – 56.4 — 1
56.5 – 56.9 — 0
57.0 – 57.4 — 0
57.5 – 57.9 — 0
58.0 – 58.4 — 1
58.5 – 58.9 — 1
59
60.0 – 60.4 — 0
60.5 – 60.9 — 0
61.0 – 61.4 — 4
61.5 – 61.9 — 0
62.0 – 62.4 — 1
62.5 – 62.9 — 2
63.0 – 63.4 — 4
63.5 – 63.9 — 3
64.0 – 64.4 — 0
64.5 – 64.9 — 0
65.0 – 65.4 — 2
65.5 – 65.9 — 0
66.0 66.4 — 1
66.5 – 66.9 — 2
67 – 67.4 — 0
67.5 67.9 — 0
68 68.4 — 0
68.5 68.9 — 0
69 69.4 — 0
69.5 69.9 — 0
70. 70.4 — 0
70.5 – 70.9 — 1
71. 71.4 — 0
71.5 71.9 — 0
72 72.4 — 1
72.5 72.9 — 0
73 – 73.4 — 0
73.5 – 73.9 — 1
74 74.4 — 0
74.5 74.9 — 1
75 75.4 — 0
75.5 75.9 — 0
76 76.4 — 1
76.5 76.9 — 0
77 77.4 — 0
77.5 77.9 — 0
78 78.4 — 0
78.5 78.9 — 1
79 79.4 — 0
79.5 79.9 — 0
80 80.4 — 1
80.5 80.9 0
81 0
82 0
83 0
84 – 1

Humerus M. anyalta S.D.

1 } 1
0 }
2 } 2
0 }
0 } 4
4 }
3 } 10
7 }
0 } 2
2 }
3 } 3
0 }
6 } 0
0 }
1 }
0 }
1 }
1 }
0 }
1 }
0 }
1 }
0

85.2 – 85 – 85.5

78.7 78.1 78.5

78.6 – 78.9

74.6 74.0 – 7

73.5

72.2 32

70.9 32

64

96

102 4

29

29

261

58

841

35

35

175

105

1225

37

37

259

111

1369

33

33

99

99

189

36

36

216

108

1296

841 29

900 30

960 31

1024 32

1089 33

1225 35

1225 35

1225 35

1296 36

1369 37

11554

4) 33 3

333

999

999

999

10) 10889

10) 11 10889

11154a

11088.9

9) 65.1 (7.27

63

21

18

30

7.27

100

10) 727.0.0

72.7

V Higher Than 10 suggest heterogeneity at subspecific level (apparent)

see p. 91

fossil V's run higher than Recent.

1442

1442

2884

5768

5768

1442

2079364

91015.8

23) 2079364

207 23

#34

135

190